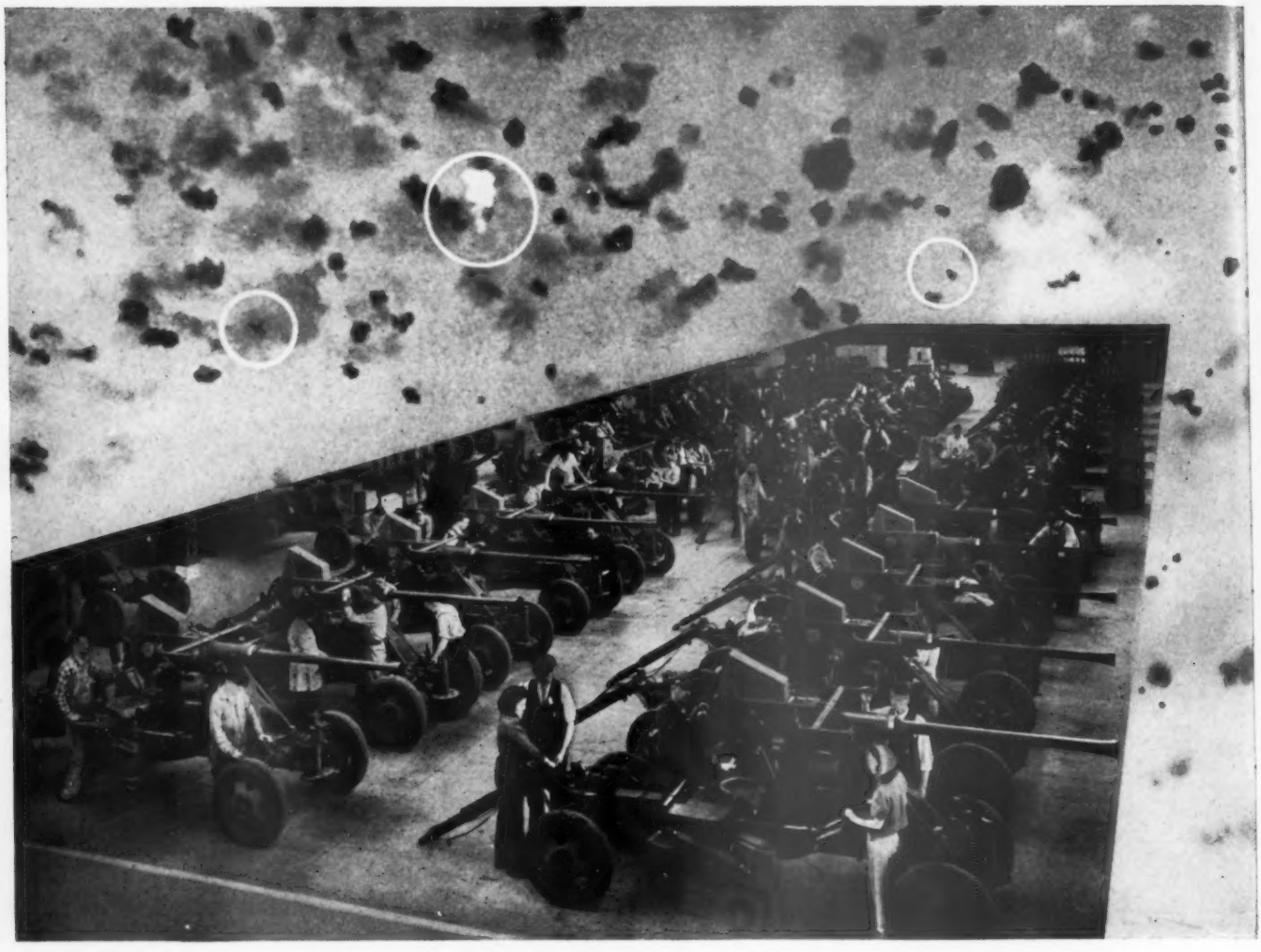
PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING AGENTS

N.A.P.A. Convention Program

See page 69

A CONOVER · MAST PUBLICATION MAY, 1943 35 CENTS PER COPY



"KNOW-HOW" that increases production

TYPICAL of mass production are these 40-mm. Bofors anti-aircraft guns. Typical, too, of mass expenditure of shells is this heavy barrage put up against enemy aircraft. (Shown in circles).

Whether producing guns, shells, planes, tanks, ships, etc. management is finding a quick solution to many of its mass-production problems through the lubrication engineer and the lubricants he recommends.

A Texaco Engineer trained in the "KNOW-HOW" of your industry will gladly cooperate in the selection of the most suitable Texaco Lubricants to increase the output of your plants. Phone or write the nearest of more than 2300 distributing points in the 48 States or write to:

The Texas Company, 135 East 42nd Street, New York, N. Y.

THEY PREFER TEXACO

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

★ More buses, more bus lines and more bus-miles are lubricated and fueled with Texaco than with any other brand.

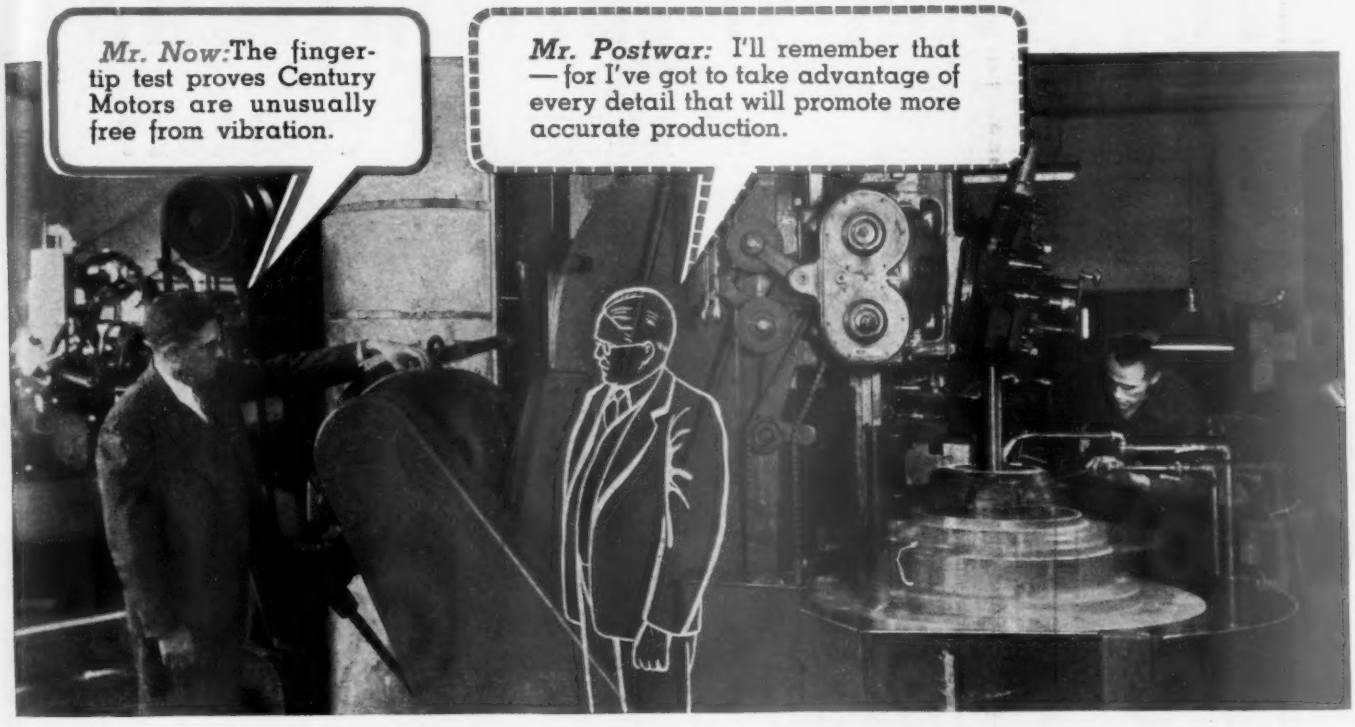
★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

TEXACO

TEXACO Lubricants, Fuels and Engineering Service

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

Take a Look at TOMORROW—*Today!*


Mr. Now: The finger-tip test proves Century Motors are unusually free from vibration.
Mr. Postwar: I'll remember that — for I've got to take advantage of every detail that will promote more accurate production.

CENTURY MOTORS'

Unusual Freedom From Vibration Helps Machine Tool Accuracy

Century Form J Motor

On today's production front, Century Motors' unusual freedom from vibration is recognized as being of vital importance where quietness, accuracy, and precision work are all-essential.

Not only the rotational balance of Century Motors, but their design—which includes magnetic proportions, end-bumpers, rugged frames, extreme rigidity, and accurately machined feet—contribute to this extremely valuable feature. You can easily test it by placing your finger-tips on a running motor!

Out of the demands of Wartime production, where so often tolerances must be held to the closest limits, are being developed even *finer* Century Motors. It will pay you to remember Century in your present and postwar planning.

CENTURY ELECTRIC CO. 1806 Pine Street, St. Louis, Mo.
Offices and Stock Points in Principal Cities

Century MOTORS

Century Motors are available in a wide variety of types from 1/6 to 600 horsepower.

323

One of the Largest EXCLUSIVE Motor and Generator Manufacturers in the World

When writing Century Electric Co. please mention Purchasing

Why risk Interruptions

IN AUTOMATIC CONTROL?

It's easy to *play safe* with Quick-Check Maintenance Cards!

Have you ever considered what it would mean to operate your plant without automatic temperature controllers? More work . . . more waste . . . curtailments in output!

Foxboro now offers you an easy way to forestall neglect, or accidents to instruments that might necessitate such costly operation. Without charge, you may obtain Foxboro Quick-Check Cards outlining essential maintenance steps for each major type of instrument in your plant.

Attached to your installations or conveniently filed, these 9″ x 11″ Quick-Check Cards map out an easy routine that will keep instruments operating at top efficiency for the duration . . . save the uncertainties of wartime replacements or repairs . . . help to prevent interruptions in instrument performance. Equally useful for Foxboro or any other standard instruments.

Write us, specifying all different types of instruments you use. **The Foxboro Company, 178 Neponset Ave., Foxboro, Mass., U. S. A.** Branches in principal cities of U. S. and Canada.

* * *

This typical Quick-Check Card gives complete instructions "in a nutshell" for easy maintenance of Temperature Controllers and precision Control Valves of any standard make. Similar cards available for all major types of instruments.

"For outstanding production", The Foxboro Company has been awarded the Army-Navy "E" Pennant.

ARMY (E) NAVY

FOXBORO
REG. U. S. PAT. OFF.
Instruments

PURCHASING, published monthly by Conover-Mast Company, Publication Office, Orange, Conn. Editorial and Executive Offices, 205 East 42nd St., New York, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription, $3.00 a year in the U. S. A. Canada and Foreign $4.00. Volume XIV. No. 5

Better Steels are Coming— from the Tests of War

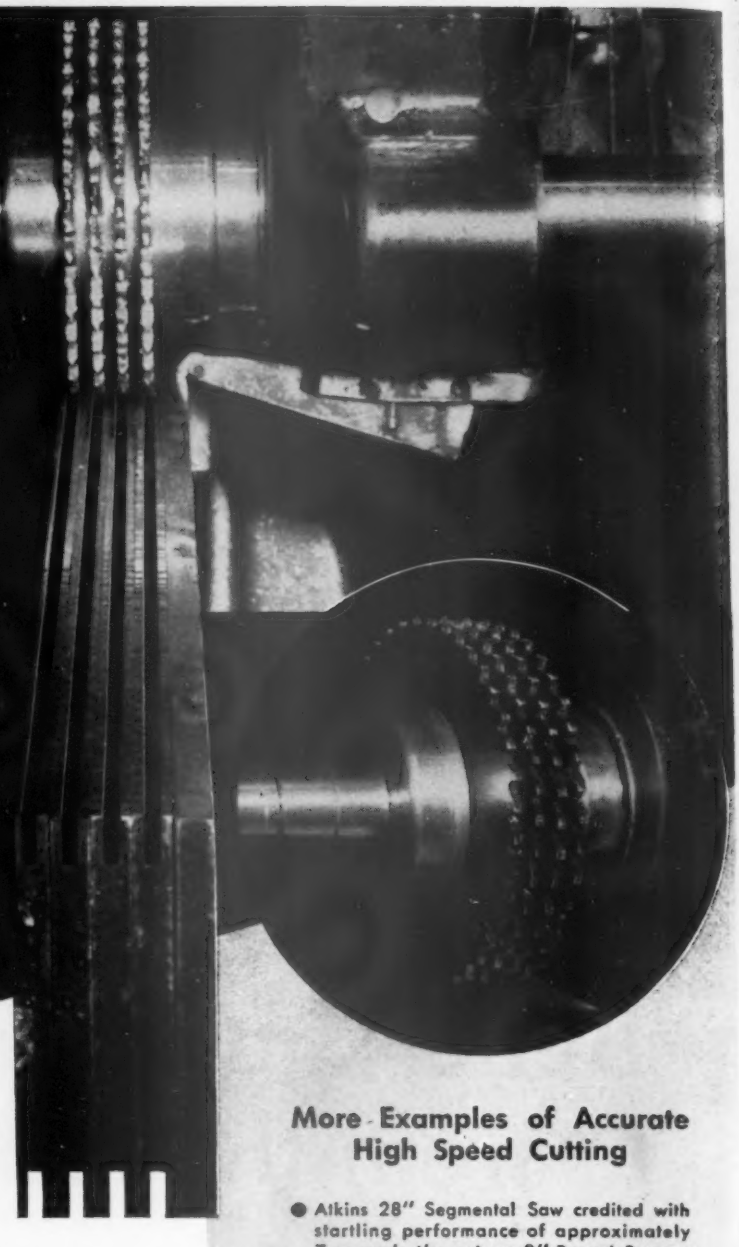
Hour after hour, month after month, Inland metallurgists study not only the needs for this war of steel, but also the requirements of a victorious America—the America that will turn again to peacetime developments in the crafts, and in the sciences—new developments that will prove again that free peoples set the pace for others to follow. Coming out of the tests of war are finer steels—steels that will set new standards of safety and speed in transportation. Steels that will help bring the newest advancements in swift communications into most homes in the land. Steels that will bring new conceptions of beauty, convenience, comfort, and utility—all at prices that can be afforded by the average American. Yes, you can look forward to the day when steel from Inland, now flowing 100 per cent into war products, will help build a greater America.

INLAND STEEL COMPANY

38 S. Dearborn St., Chicago, Ill. • Sales Offices: Milwaukee, Detroit, St. Paul, St. Louis, Kansas City

When writing Inland Steel Company please mention Purchasing

ATKINS *Curled Chip* SAWS



Accurate Gang Sawing Speeds Production by Cutting 204" in 8 Hours

● Here is an example of high speed, accurate gang sawing you will recognize as way above average. Four Atkins Curled-Chip Milling Saws, operated in a gang as shown, were cutting ⅜-inch deep, ⅛-inch wide slots in steel plates. The saws were 5-inch diameter, operated at 32 RPM spindle speed, 42 FPM peripheral rim speed. The material cut was SAE 1090 22 Rockwell (and that's plenty hard). Yet these saws cut at the rate of 204" in 8 hours—a truly remarkable record, on work requiring utmost cutting accuracy.

Our file of performance data on the great cutting capacity and long cutting life of Atkins Curled-Chip Saws is growing daily. It offers convincing proof that the Atkins Curled-Chip System (including Milling Saws, Segmental Saws, Powersaw Blades and Band Saws) is today's most practical way of getting work out fast and efficiently. Write for these data today.

More Examples of Accurate High Speed Cutting

- Atkins 28" Segmental Saw credited with startling performance of approximately *7 seconds the cut* on 8" Round Bronze Billets.
- **650% More Production**—Sawing 40 mm. burr-free shell bands at 1 each second with an 8" Curled-Chip Saw instead of 4 every 30 seconds on a screw machine.
- 860 Brass Slabs, 15⅛" x 4½", 59,985 sq. in. *cut between sharpenings* by Atkins 30" Segmental Saw.
- Atkins 28" Segmental Saw records *27 seconds per cut* on 77 mm. stock.
- **Production 45 Times Faster**—A whirlwind reduction in cutting time on 2½" Electric Cast Steel—7½ minutes to 10 seconds is the achievement of Atkins new 6" Curled-Chip Milling Saw.

E. C. ATKINS and CO.

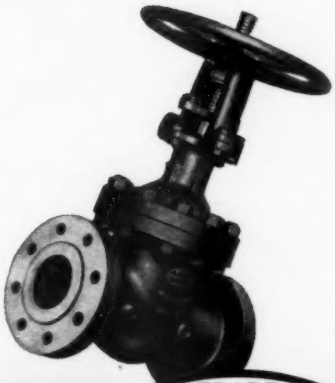
When writing E. C. Atkins and Company please mention Purchasing

Darling Valve & Manufacturing Co. is more than 40 years old in experience but is modern in facilities. It can serve you best by solving your problems and recommending valves that last longer.

WANTED! THE TOUGHEST VALVE JOB YOU'VE GOT

● In every plant there is at least one "impossible" valve problem — that's the one we want! No matter what it involves—corrosive or erosive materials — high or low pressures or temperatures — mechanical operation to accurate timing — special alloys — unusual installations—severe operating conditions — where other valves have failed, have cost too much, have caused you trouble — *that's* the place Darling Gate Valve design can positively prove its value.

At your service are the engineers of the Darling Valve & Manufacturing Co. Working with actual field problems for over 40 years, this staff has met and solved almost every possible type of valve problem—perhaps the very one you are faced with now. Their service is yours without cost or obligation. Write or call the Darling Valve & Manufacturing Co., Williamsport, Pa.



Darling offers you a quality line of longer-lasting Gate Valves. They come in Fully Revolving Parallel Seat Double Disc, also in Taper Seat — Slotted and Solid Wedge types. In service pressures up to 3000 pounds, you can get Darling Gate Valves in Cast Iron, Bronze, Forged Steel, Cast Steel, and Corrosion Resistant Alloys. Darling also manufactures Compression Type Fire Hydrants, Check Valves, Motor and Cylinder Operated Valves, and many accessories.

TRADE DARLING MARK

VALVE & MANUFACTURING CO.
WILLIAMSPORT, PA.

When writing Darling Valve & Manufacturing Co. please mention Purchasing

MACKLIN
GRINDING WHEELS

THAT WHEEL YOU RECOMMENDED HAS ELIMINATED OUR BOTTLE-NECK AND NOW OUR PRODUCTION IS REALLY GOING TO TOWN
THATS MY JOB "PROTECT YOUR PRODUCTION"
MACKLIN FIELD ENGINEER

Macklin Grinding Wheels are made in all sizes and shapes for every type of grinding job. An experienced Macklin Field Engineer is available at all times for the asking—no obligation.

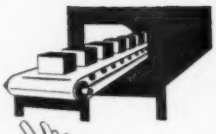
DON'T TAKE BONDAGE - INVEST IN WAR BONDS

MACKLIN COMPANY

Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.

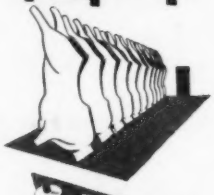
Distributors in all principal cities

Sales Offices: — Chicago - New York - Detroit - Pittsburgh - Cleveland - Cincinnati - Milwaukee - Philadelphia



HIGH TEMPERATURE

The bearings on conveyors running through heat treating kilns were a real problem to lubricate. LUBRIPLATE No. 320 does an outstanding job.

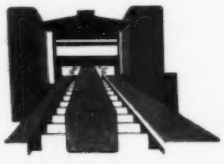


LOW TEMPERATURE

Refrigerator room equipment is subjected to cold and condensation. LUBRIPLATE No. 105-V gives perfect lubrication to 40° below zero.

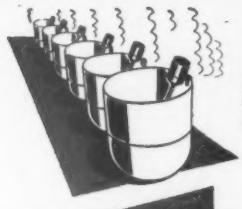
HIGH SPEEDS

Wood Working and Textile Spindle speeds wer limited by lubrication. LUBRIPLATE No. 1 has made the desired high speeds possible.



HEAVY LOADS

The high film strength of LUBRIPLATE No. 130-A permits rolling mills to use more pressure and run faster without damage to bearings.

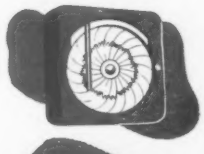


STEAM and CHEMICALS

Food Packers whose machines must be scrubbed with scalding water find LUBRIPLATE No. 107 doesn't wash off nor is it affected by food acids.

BALL BEARINGS

Reports from every industry show that LUBRIPLATE BALL BEARING Lubricant increases the life of bearings and keeps them running cool.



PRECISION BEARINGS

Minimized "drag" and the fact that LUBRIPLATE No. 105-V prevents rust has caused its adoption by numerous instrument makers.

UNDER WATER

A dredging company tells us that LUBRIPLATE No. 25 is the only lubricant they found that worked satisfactorily in under water gear boxes.

EVERY PLANT NEEDS LUBRIPLATE

We need more guns . . . we need more planes . . . we need more food . . . we need more of everything to win this war.

Proper lubrication, therefore, is the number one essential in every plant. That is why LUBRIPLATE lubricants are so widely used today. In addition to giving better lubrication, LUBRIPLATE prevents rust and corrosion even in the presence of many acids. It withstands water and doesn't "wash out" of bearings. The enormous film strength of LUBRIPLATE permits heavier loads on bearings, yet it will not cause drag in the most delicate instrument.

LUBRIPLATE lubricants are manufactured in various fluid and non-fluid densities to meet every condition. They are packed in containers from one to five hundred pounds.

Send for a copy of "The LUBRIPLATE Film". It tells what LUBRIPLATE is doing in your industry.

LUBRIPLATE DIVISION

FISKE BROTHERS REFINING COMPANY

NEWARK, N. J. SINCE 1870 TOLEDO, O.

WRITE FOR THE NAME OF THE DEALER NEAR YOU

When writing Fiske Brothers Refining Company please mention Purchasing

GET THIS "Know-How" Information FOR YOUR PLANT

USE COUPON BELOW

☐ **1. SPRINGS, Wire Forms, Stampings**—Timesaving guide for those who specify, inspect and purchase compression, extension, and torsion springs, wire forms, etc. Accurate Spring Mfg. Co.

☐ **2. PRODUCTION CONTROL SYSTEMS**—Bulletin of 8 pages illustrates and describes Flexoline, Visible Index system, and Purchase and Stock Control systems. Acme Visible Records, Inc.

☐ **3. OXYACETYLENE FLAME** Adjustment Chart—Natural color photographs said to be an accurate guide for adjusting flame. How many? Air Reduction.

☐ **4. WELDING OF PIPING** — Twelve-page treatise on "The Welding of Piping" which includes tubing,—steel, iron and non-ferrous. Air Reduction.

☐ **5. RESINS, GUMS, OILS** — Catalog deals with essential information on Alkydol and Synaryl Resins, Ester-Gums and Alk-Oils, Synthetic Oils and Hard Gums, resin solutions and specialties for paint, enamel, ink, adhesives and plastics, formulations and other detail. Alkydol Laboratories, Inc.

☐ **6. CONVEYORS** — Apron and roller, trough belt, overhead trolley, groove apron (for hot shell forgings), and combination roller-pusher conveyor, are pictured and described in 6-page bulletin on systems for handling war products. The Alvey-Ferguson Co.

☐ **7. COPPER BASE ALLOY** — Ampco Metal and its uses in modern industry are covered in 24-page book, which details grades, physical properties and uses in bearings, gears, dies, wear strips, cams, etc. Ampco Metal, Inc.

☐ **8. PNEUMATIC TOOLS** for Industry — Grinders, drills, screw drivers, nut setters, polishers, sanders, paint mixers, tool-room kits, socket wrenches and adapters, screw driver bits and accessories are illustrated and described in 20-page catalog with price list. The Aro Equipment Corp.

☐ **9. METALITE CLOTH** banks, belts, pencils, cords, discs, cones, cloth, etc., for troublesome metal finishing jobs, described in booklet "Blue Print for Faster Better Production." Behr-Manning Corp.

☐ **10. PULVERIZED COAL** for forge furnaces in lieu of fuel oil, is covered in 8-page booklet, which states that pulverized coal is suited to small as well as large furnaces. Lists manufacturers of equipment. Bituminous Coal Research, Inc.

☐ **11. ELECTRICAL CONNECTORS** — Pocket catalog of electrical connectors for every wire, cable and bus application, with table of N.E.C. Standards. Burndy Engineering Co., Inc.

☐ **12. BUSHINGS & MOUNTINGS** Insulated with rubber (or synthetic) to stop vibration, absorb shock, reduce noise, etc., covered by 4-page bulletin. Bushings, Inc.

☐ **13. ELECTRICAL CONTACTS** — In 36-page, two-color catalog, design, manufacture and application of electrical contacts of silver, platinum, tungsten, molybdenum and other metals and alloys, are described and illustrated. Callite Tungsten Corp.

☐ **14. BRAZING** Cement Carbide Tools—Recommended procedure, the sandwich braze assembly, and how to renew worn-out high speed steel cutters, all described in detail in 4-page bulletin. Carboloy Co.

☐ **15. PAPER** — Sample book contains sheets of coated, creped and crinkled, waxed, waterproof or laminated, oiled and varnished, grease resistant, water repellent, flame resistant and termite resistant, plasticized, shellac, aluminum, lacquer and protein coated, latex, waxstick and asphalt combined papers. Central Paper Co., Inc.

☐ **16. PORTABLE ELECTRIC** Tools—Catalog of 68 pages illustrates and describes Hicycle tools—drills, tappers, reamers, nut runners, screw drivers, grinders, sanders, polishers, etc., available in 166 models and 557 sizes. Chicago Pneumatic Tool Co.

☐ **17. DEAERATION** of boiler feed and process work explained in 36 page treatment of tray-type deaerators, atomizing deaerators, deaerating hot water generators and cold water deaerators. Sections devoted to corrosion control, pH control, etc. Cochrane Corp.

☐ **18. BROACH SHARPENER** — Two-color bulletin of eight pages describes new machine for sharpening both round and flat broaches, complete specifications covering dimensions, sizes of broaches which can be handled, and standard and extra equipment available for use with the machine. Varied types of standard broaching machines are also illustrated. Colonial Broach Co.

☐ **19. FLUORESCENT PORTABLES**—Page bulletin describes and illustrates portable fluorescent lamps for production, inspection and servicing. Day-Brite Lighting, Inc.

☐ **20. OILSTONE FILES** — Small circular gives sizes and prices of hard Arkansas oilstone and India oilstone files for master

(Continued on page 12)

PURCHASING 205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" Information checked.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐
11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐

NAME_____

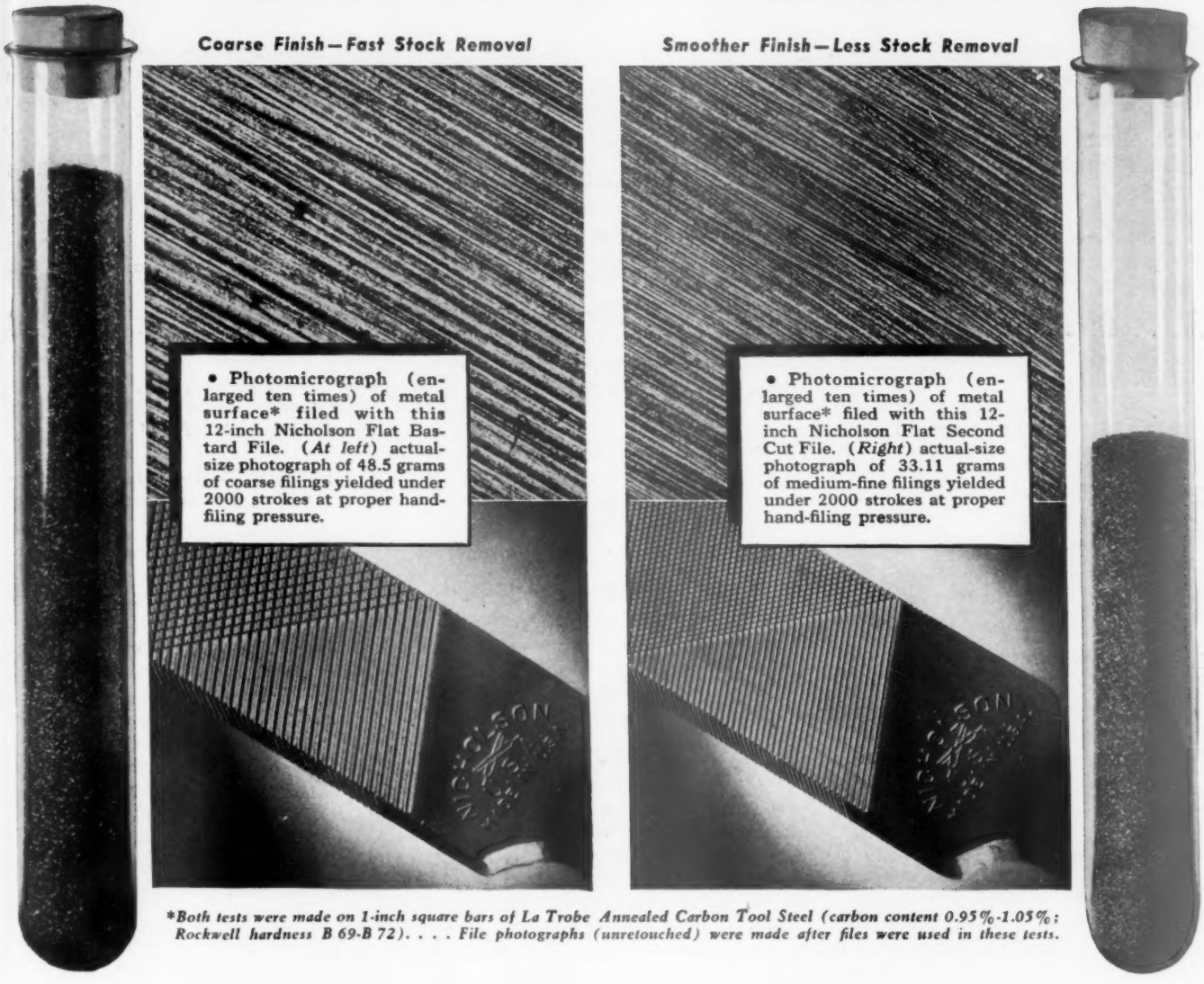
COMPANY_____

ADDRESS_____

CITY_____ STATE_____

5/43

"PHOTO FINISH" with a Big Difference


Coarse Finish—Fast Stock Removal
Smoother Finish—Less Stock Removal
• Photomicrograph (enlarged ten times) of metal surface* filed with this 12-inch Nicholson Flat Bastard File. (At left) actual-size photograph of 48.5 grams of coarse filings yielded under 2000 strokes at proper hand-filing pressure.
• Photomicrograph (enlarged ten times) of metal surface* filed with this 12-inch Nicholson Flat Second Cut File. (Right) actual-size photograph of 33.11 grams of medium-fine filings yielded under 2000 strokes at proper hand-filing pressure.

*Both tests were made on 1-inch square bars of La Trobe Annealed Carbon Tool Steel (carbon content 0.95%-1.05%; Rockwell hardness B 69-B 72). . . . File photographs (unretouched) were made after files were used in these tests.

IN FILING production, skill is important. But the comparative tests photographically illustrated above show clearly that *The right file for the job* is highly important toward making that skill yield its utmost. (The wrong file wastes time, reduces efficiency, produces the wrong finish—and often spoils the work.)

These tests, among many made continually in the Nicholson test laboratory, show the work of two regular Nicholson Machinists' Files used under identical conditions by highly skilled mechanics. Similar tests with other types and cuts of files will reveal equally interesting comparisons.

Ask yourself, "What's the job and what's the metal; what's the finish and what's the time the job warrants?" Do they call for rapid stock removal—and much or little; for rough, medium or precision results?

If you have a filing problem that is particularly troublesome, send us a detailed description. Our engineering service will gladly undertake to *find* the answer for you.

And—if it's maximum production per *right file*, or per *file-dollar*, you seek, top-quality Nicholson or Black Diamond brands will fully reward your search. Consult your mill-supply house.

FREE REPRINTS

of this advertisement. Contains excellent instructive material toward training new workers. How many copies shall we send you?

FREE BOOK, "FILE FILOSOPHY" (48 pages). Among the many interesting facts and illustrations on files and filing, it covers notable differences in design and results between regular files and special-purpose files for Aluminum, Stainless Steel, Brass, Foundry Castings, Die Castings, Shear Tooth and Lathe filing. A valuable shop-school "textbook."

NICHOLSON FILE CO., 28 Acorn Street
Providence, R. I., U. S. A.
(Also Canadian Plant, Port Hope, Ont.)

NICHOLSON FILES
FOR EVERY PURPOSE

NICHOLSON U.S.A. MADE IN U. S. A.

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

machinists. Line includes square, triangular, ground, half-round, and other shapes. Behr-Manning Corp.

☐ **21. HYDRAULIC EQUIPMENT Catalog**—War-time buyers' reference on hydraulic hand jacks, 3 to 50 tons cap., wheeled service jacks, gauge equipped jacks, "Porto-Power hydraulic units, maintenance kits, pipe benders, etc. Blackhawk Manufacturing Co.

☐ **22. TURBINE OIL CONDITIONING** — Effect of normal operation on lubricating oil and effects of deteriorated lubricants are explained in special brochure, which also describes and illustrates successful conditioning method. S. F. Bowser Co.

☐ **23. WORKING GIRL'S Protection**—Catalog outlining specialized safety equipment describes varied units for protection from head to foot, including clothing and caps by nationally known costume designers. The Boyer-Campbell Co.

☐ **24. INCREASED CUTTING TOOL LIFE**—Increases of 100% to 1000% are claimed for special process of chrome plating and treating the knife edge of cutting tools, devised by publishing company's engineer. Free treating of samples and directions for using process without cost on Government contracts. Brochure on request. Crowell-Collier Publishing Co.

☐ **25. CONTOUR SAWING of Metals**—265 page textbook on Art of Contour Machining, Doall contour saws, and training program. 85 pages show how contour machining replaces conventional machining. 80% of text is illustrated with charts and diagrams on proper speeds and feeds in the shaping of all basic materials—ferrous and non-ferrous metals and alloys, plastics, wood, fiber-board, rubber, etc. 44-page section gives specific information on machine tools and machine shop practice. Free. Doall Service Co.

☐ **26. AM. ELECTRICAL STANDARDS** for Fractional Horsepower Motors. Illustrated pocketsize booklet is digest of standards approved by AIE, ASME, NEMA, UL, U.S. Dep't of Commerce-Bureau of Standards, U. S. Navy and U.S. War Department. Defines terms, parts, etc. The Dunmore Co.

☐ **27. VITREOUS CHINA** Fixtures for industrials and war housing—lavatories, toilets, urinals, slop sinks, laundry trays, etc., illustrated and described in folder. Eljer Co.

☐ **28. WELDING** — Low Temperature, on chrome-molybdenum steel for aircraft. Bulletin describes welding alloy, its advantages, and procedure. Eutectic Welding Alloys Co.

☐ **29. MAGNETIC REVERSING SWITCH**—Bulletin describes cam type dome switch for reversing or control of two-speed motors for turret lathes and such machines where oil, dust or moisture constitute a problem. Furnas Electric Co.

☐ **30. CONDENSERS** and Coolers, Evaporative—Bulletin describes new General Electric line. Gives general information with regard to war-time industrial uses, and contains summary specifications.

☐ **31. ELECTRONIC CONTACTORS** for A-C resistance welding are described in 4-page bulletin which outlines their desirable features and illustrates construction, ease of installation and simplicity of operation. General Electric Co.

☐ **32. MAGNET WIRE** — Formex magnet wire, and relative properties of conventional magnet wire and the various advantages Formex offers in space saving, easy winding, more feet per pound, lower first cost, types available, etc., application and varnish treatment, are told in 28-page bulletin. General Electric Co.

☐ **33. MOTOR CONTROLS** — Simplified guides on selection and application of commonly used motor controls. Fundamentals are presented in an interesting and understandable manner. General Electric Co.

☐ **34. RADIO & ELECTRONICS**—100 page catalog of all types of radio and electronics supplies for production lines and maintenance, research and control laboratories, war training and combat—a reference buying guide. Allied Radio Corp.

☐ **35. SWITCHGEAR**—Mercury-Arc Rectifier Equipment. Booklet describes and illustrates by picture and diagram construction and layout details. General Electric Co.

☐ **36. MIDGET RELAY** — Tiny relay "so small it can be hidden in closed palm" is described in bulletin giving operating data, weight and diagrams. Guardian Eelctric Co.

☐ **37. AIRCRAFT RELAYS**—Bulletin gives illustrations, diagrams and operating characteristics of two types—one for machine gun and cannon-firing electric circuits, the other being a general purpose aircraft radio relay with contact combinations up to 3-pole, double throw. Guardian Electric Manufacturing Co.

☐ **38. BRAZING.** Low Temperature—Silver Alloy Brazing with Sil-Fos and Easy-Flo—for joining ferrous, non-ferrous and dissimilar metals, with speed, strength and economy, detailed in 18-page bulletin. Handy & Harman.

☐ **39. ARC WELDER** for welding heavy plate available on quick delivery is described in bulletin—single welding service range from 60 to 450 amps. Also, bulletins on higher or lower welding range types. Harnischfeger Corp.

☐ **40. ALLOY METALS** and List of Sources —Time saver for Purchasing Agents and others. Shows trade-names, characteristics and principal constituents, and names and addresses of makers. Hobart Bros.

☐ **41. OIL & COOLANT CLARIFIER**—Completely automatic machine for the removal of abrasives from oils and coolants used in grinding, honing, cutting, boring and similar operations, illustrated and described in 4-page bulletin. Honan-Crane Corporation.

(Continued on page 14)

PURCHASING 205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" Information checked.

21 ☐ 22 ☐ 23 ☐ 24 ☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31 ☐

32 ☐ 33 ☐ 34 ☐ 35 ☐ 36 ☐ 37 ☐ 38 ☐ 39 ☐ 40 ☐ 41 ☐

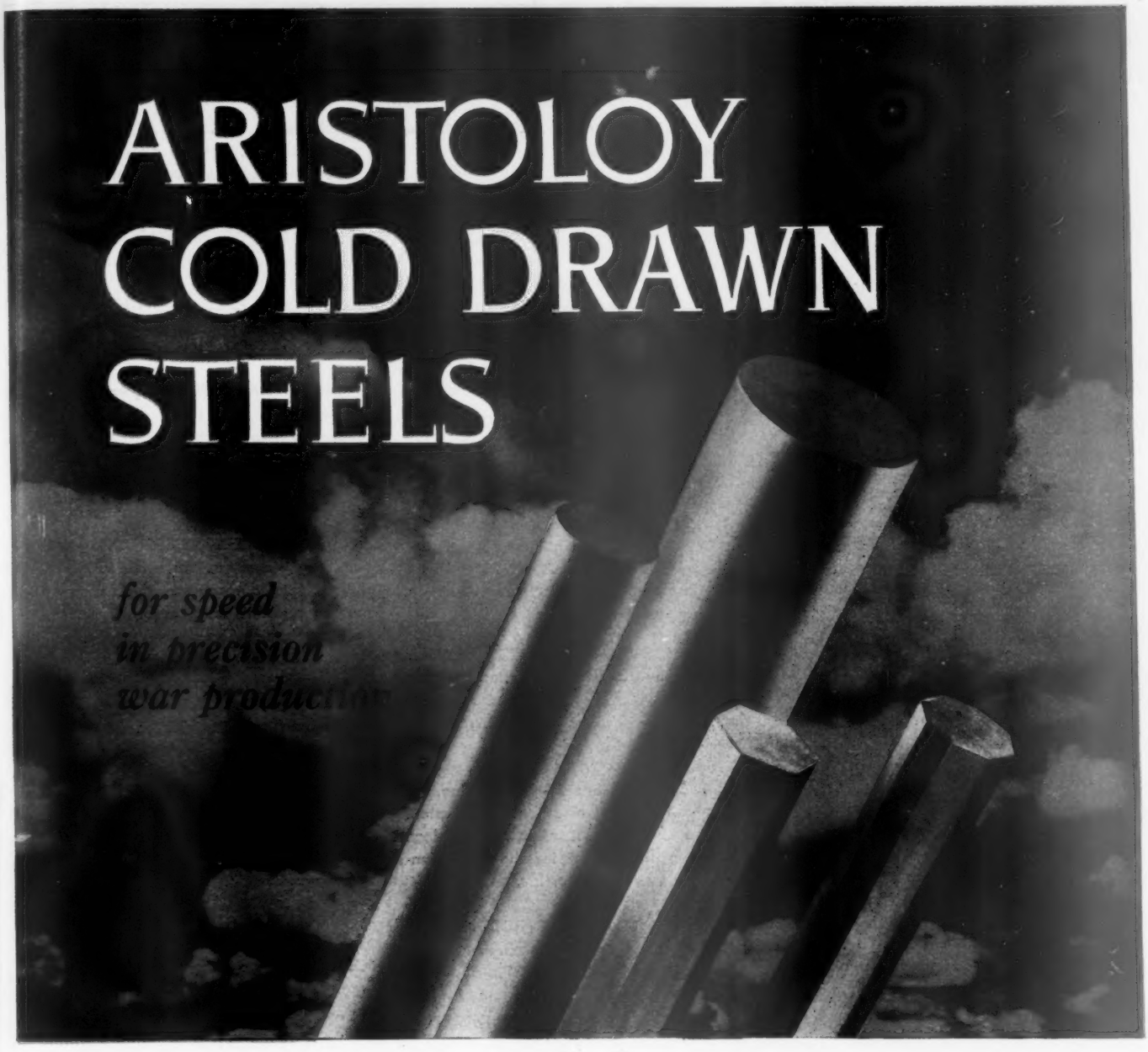
NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

5/43



Cold Drawn Steels have the vital wartime job of keeping fast automatic production machines operating continuously at peak loads. The uniform surface and close tolerance of Aristoloy Cold Drawn Steels assure smooth machining with longer tool life and uninterrupted production.

COPPERWELD STEEL COMPANY
WARREN, OHIO

ARISTOLOY STEELS

TO BUILD MORE • • • BETTER • • • FASTER

Carbon Tool Steels • Aircraft Quality Steels • Nitralloy Steels • Alloy Tool Steels • Stainless Steels • Bearing Quality Steels • Cold Drawn Steels

When writing Copperweld Steel Company please mention Purchasing

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

☐ **42. BIG LIFT TRUCK**—Pneumatic tires, and hydraulic lift of 7500 lbs. capacity on 42-inch load arms, feature lift truck designed to carry loads up grades and over uneven surfaces, described in 4-page bulletin. Willamette Hyster Co.

☐ **43. ROOF VENTILATORS**—New roof ventilators of non-critical materials are illustrated and described in 8-page catalog, which also shows installation methods and standard applications. Swartwout Co.

☐ **44. STACKERS & CONVEYORS** — storage and warehouse service. Portable flat belt or wood apron stackers, jointed boom stackers and flat belt conveyors covered in 12-page bulletin. The Jeffery Mfg. Co.

☐ **45. WAR-FORMULA PAINTS** — Mill-white flat, machine enamel, mill-white gloss enamel, commercial interior gloss (17 colors), semi-gloss (10 colors), dado enamel for industrial interiors, etc. are described in 12 page booklet which contains primer and coating specifications, and color cards. S. C. Johnson & Son, Inc.

☐ **46. TOGGLE-ACTION CLAMPING** Tools —for drilling, frabricating, welding. Flipping a lever fastens or releases work. Toggle clamps, pliers, C-Clamps, vise grips, vises, and price list. Detailed in plastic bound catalog. Knu-Vise, Inc.

☐ **47. PNEUMATIC CONTROL** Equipment for regulation of pH, conductivity and other conditions as well as temperature, is covered by 16-page catalog. Controller is described as being ready to be connected. Leeds & Northup Co.

☐ **48. ARC WELDING**—Get copy for your Welding Dep't. 42-page booklet "Factors Affecting Increased Welding Production" tells how to get the most from arc welding. Lincoln Electric Co.

☐ **49. LINK-BELT** 180-page general catalog of power transmission and materials handling equipment, just released. Particularly designed for the man who orders repair parts or wishes to buy parts for new installation. Shows dimensions, weights, lists prices, etc. Link-Belt Co.

☐ **50. WOOD CABINETS.** Shoprobes, lockers, shevling, "engineered in wood" are covered by 8-page catalog. Lyon Metal Products.

☐ **51. SHOP EQUIPMENT**—Work benches, welding benches, bench bins, tool stands, cabinets, (tool and wardrobe), shop desks, bar racks, shop boxes, steelart shelving, stock carts, lockers and vocational equipment are detailed in 40-page catalog. Lyon Metal Products, Inc.

☐ **52. WELDING POSITIONER** — Bulletin describes hydraulically operated welding positioner, which tilts, lifts and revolves; and hydraulic elevating welding tables. Lyon-Raymond Corp.

☐ **53. CRANES**—Standard, Traveling, Jib — manually and electrically operated, hoists, etc., are described in two catalogs illustrating types and installations. Manning, Maxwell & Moore, Inc.

☐ **54. PORTABLE METAL ROLLING MACHINE**—Drive cleat, Pittsburgh lock, acme lock, standing edge, etc. Rolls available for double acme, drive cleat and right angle formations. Described in page circular. Maplewood Machinery Co.

☐ **55. SHEET METAL WORKING MACHINE**—Ten in one—interchangeable rolls for wiring, burring, turning, slitting, crimping, beading, edge straightening, combination cutting and beading, etc.; model D for 10 gauge and lighter. Illustrated sheet shows cost of jigs, cutters, etc. Maplewood Machinery Co.

☐ **56. STENCIL HANDBOOK** — Get copy for your shipping departments. Tells how to correctly address shipments, and how to save time and money with latest type stencil machine, and accessories. Marsh Stencil Machine Co.

☐ **57. SPRAY PAINTING** equipment — spray guns, containers, complete outfits, oil and water extractors, pressure feed containers, fans and portable equipment are described in 8-page catalog. Master Manufacturing Co.

☐ **58. CHIP BREAKER CHARTS** — Wall charts, printed in three colors, present dimensional diagrams for the correct grinding of parallel, angular, and groove type chip breakers. Show photographs of three chip breaker types and kinds of chips from each. Also, carry instructions on chip breaker grinding. Get supply for use in your machine ship. McKena Metals Co., Latrobe, Pa.

☐ **59. PRIMER FINISH COAT Combined** —Industrial paint is said to cover rough cement, plaster, kalsomine, water paints, plywood, wallboard, brick or concrete in one operation. M. J. Merkin Paint Co., Inc.

☐ **60. C-CLAMPS & PRESSURE UNITS** — Bulletin describes Twistite Pressure units. Eccentric spline arrangement enables operator to lock or unlock pressure bar with a single twist. Quick, firm locking; instantaneous release. Michigan Clamp Co.

☐ **61. UNIT HEATERS**—"Grid" Cast Iron Unit Heaters as a substitute for aluminum heating sections, are described in catalog sheet just released by D. J. Murray Mfg. Co.

☐ **62. ADHESIVES HANDBOOK**—How to Prepare and Use Glues, Pastes and Gums, Special Cements, etc. Deals with types, storage and care and how to use. National Adhesives Divn. National Starch Products, Inc.

☐ **63. ANGLE DRIVE** — New universal angle drive for convenient hand control of values and other devices, heavy duty angle drive for power operation, and universal joints are illustrated and detailed in 8-page bulletin. Payne Dean & Co., Laconia, N. H.

☐ **64. GEAR** Data Book and Catalog, 72 pages includes tables of dimensions for various types of gears, and data on speed reducing units, MotoReducers and electric

(Continued on page 16)

PURCHASING 205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" Information checked.

42 ☐ 43 ☐ 44 ☐ 45 ☐ 46 ☐ 47 ☐ 48 ☐ 49 ☐ 50 ☐ 51 ☐
52 ☐ 53 ☐ 54 ☐ 55 ☐ 56 ☐ 57 ☐ 58 ☐ 59 ☐ 60 ☐ 61 ☐
62 ☐ 63 ☐ 64 ☐

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

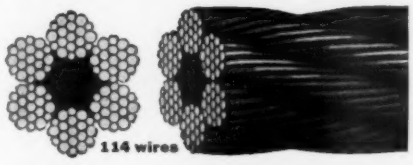
A Short Breaking-in Period Extends Wire Rope Life

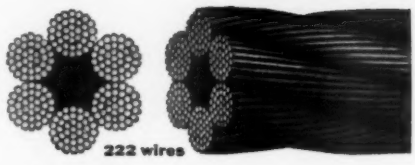
{This is Number 14 of a series of informative articles on how to get the most out of wire rope. It is directed to those who want to do everything they can to lengthen wire rope life and conserve steel. Other articles in the series are available on request.}

* * *

Cooperation in the present emergency is a vital necessity to success. It is a basic fundamental without which wars cannot be won, freedom cannot be maintained.

Cooperation within a piece of wire rope is just as essential to its success, but, being wire rope, it needs our help to do its job.





There are 114 or more wires in the average wire rope. They need to cooperate together by each carrying their share of the load. Illustrated above are two standard ropes showing number of wires in each.

The process of manufacture lays these wires into a rope and manufacturers ship this rope to you prepared to do its task.

The rope's success depends a great deal on how it becomes adapted to the equipment and to the work it must do.

WHAT "BREAKING IN" MEANS

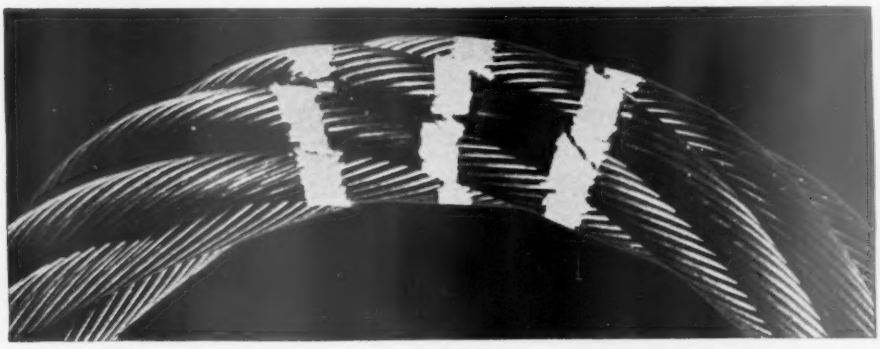
For example, we all know that the life of a book depends upon proper handling at the start. To simply grab a book and pop it open injures the binding, but by gradually and carefully opening the book at different points, it becomes "broken in" and its life is greatly extended.

Wire rope is a complex machine that has many wires, like a book has many pages. When the rope is put into use, a little care in handling and operating it at first, pays dividends later. Haste makes waste, which you want to avoid.

The breaking-in period gives the rope a chance to adapt itself to the track or path in which it must travel. It becomes accustomed to the arc of bending, becomes comfortably seated in the groove and assures the operator, after a short "trial run," that it is ready to go to work safely.

"BUT WE CAN'T TAKE THE TIME TODAY!"

The actual time taken to properly break in a rope is a small percentage of the time it takes to install a rope. If you must replace rope often and you can cut down the number of replacements by extending rope life, you will be conserving steel, reducing costs, and actually saving time.



BENDING DOES THIS

To get the picture (above) three white stripes were painted around a 5/8" 6x37 PREformed wire rope before bending. Then the wire rope was flexed by hand and this picture taken. Notice how the paint cracked up and separated, caused by the movement of the wires and strands to make the bend. Getting the rope accustomed to this flexing and wire and strand movement is a job of breaking in.

"WHAT SHALL WE DO?"

First, as has been explained in previous articles of this series, the equipment should be in good repair.

Second, as explained in article 9 of this series, the rope should be unwound from the reel or coil so as to avoid twisting and kinking.

Third, the rope should be firmly attached to the equipment, taking care to seize it with wire to prevent it untwisting.

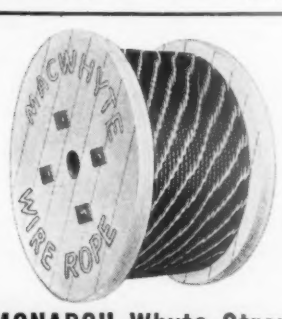
Fourth, after rope is attached and reeved around sheaves and drums, operate it without load a few times, until you see that it is flexing easily over sheaves and winding correctly on the drum.

Fifth, gradually increase the speed and load until the rope is operating up to its normal loading and speed.

WHAT ABOUT PRE-FORMED ROPE?

During the manufacture of the rope, the process of PREforming adjusts the wires and strands into the helical shape they take in the rope. This is often called a "breaking-in" process that helps prepare the rope for quick use and therefore it should not require as much "breaking in" on the job.

However, whether PREformed or non-preformed, it pays to handle the rope carefully and give it a chance to get accustomed to the operation of the equipment.



MONARCH Whyte Strand PRE-FORMED WIRE ROPE

. . . Macwhyte premier wire rope, famous for its strength, toughness, and internal lubrication.

NO. 666

MACWHYTE COMPANY

WIRE ROPE

2918 FOURTEENTH AVENUE KENOSHA, WISCONSIN

Manufacturers of MACWHYTE PREformed and Internally Lubricated Wire Rope MONARCH WHYTE STRAND Wire Rope
MACWHYTE Special Traction Elevator Cable MACWHYTE Braided Wire Rope Slings MACWHYTE Aircraft Cables and Tie-Rods

When writing Macwhyte Company please mention **Purchasing**

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

hoists, and engineering data section. Philadelphia Gear Works.

☐ **65. HYDRAULIC BENDERS**—Four-page folder illustrates and describes hydraulic benders for pipe, tubing, bar stock, moulding, channels, angles, etc.; ordinary bends, short radius bends, special curvature bends. Pines Engineering Co.

☐ **66. HAND POWER TOOLS** for precision work marking, cleaning, touching-up, grinding and regrinding, internal grinding, finishing, polishing, etc.; air-cooled handpiece and flexible shaft attachment, and complete sets, are described in folder. Precise Products Corp.

☐ **67. HYDRAULIC PUMPS,** variable volume, and Hydraulic Valves are described and illustrated in 8-page bulletin, showing variable volume, automatic volume control, two-pressure pump controls, positive volume control pumps, and balanced piston and sleeve type hydraulic valves, for machine tools, machinery and miscellaneous equipment. Racine Tool & Machine Co.

☐ **68. AIR EXPRESS WARTIME Wall Charts**—Air express priority information and lists address and phone numbers of regional priority offices; examples of rates and flying time, and other data. Railway Express Agency.

☐ **69. SWIVEL WORK LIGHTS**—Swivelier sockets and directive machine-lighting units which "stay put", available in various arm lengths and types of shades, are described in 12 page catalog which illustrates sockets, screw-in and plug-in units, escutcheon base and base units. Reliance Devices Co., Inc.

☐ **70. STONEWALL BOARD** — Asbestos-cement building board is announced in four-page bulletin. Needs no paint. Comes in three thicknesses—3/16", ¼", and ⅜". Can be sawed, scored, drilled and nailed. The Ruberoid Co.

☐ **71. AIRCRAFT ALLOY STEELS**—Combined stock list and data book, designed as guide to aircraft steel stocks, prices, sales limitations and specifications. Contains condensed version of all Aeronautical Material Specifications which pertain to steel; also Army Navy Aeronautical Specifications which cover the new NE National Emergency Steels acceptable to the aircraft industry. Supplement (part of Directive 5 March 11, 1943), details quantities, authorization prices, extras. Joseph T. Ryerson & Son, Inc.

☐ **72. ABSENTEEISM**—Plant Posters—Dramatic color-photographs and human interest messages; actual size 24" x 36", described in circular. Sheldon-Claire Co.

☐ **73. GAGE BLOCKS,** Their Use and Care, in sound slide film for showing in your plant. Showing lasts approximately one hour. Savage Tool Co.

☐ **74. YELLOW - GREEN LIGHTING** — Verd-A-Ray lamps for general, indirect, and well diffused lighting to relieve eyestrain, are described in illustrated bulletin. Save Electric Corp., Toledo, Ohio.

☐ **75. INSPECTION LABORATORY**—Limited Budget inspection laboratory is described in four-page folder, which gives details on fourteen types of measuring instruments, tools, gages and optical inspection devices. George Scherr Co.

☐ **76. REGRINDING SERVICE** and special high speed tool hardening process for converting worn tools into sharp milling cutters, described in four-page bulletin. Regrinding is said to save 80% of new tool cost. Severance Tool Co.

☐ **77. CORROSION - PROOF WRAPPING** paper described as new development for packing war materials and which eliminates multiple wrapping, is announced by Sherman Paper Products. Samples and literature showing speed-packing methods.

☐ **78. LATHE MAINTENANCE** — Keep Your Lathe in Trim." Fourth in series of booklets for users and operators to help them get more production. Deals with maintenance, tests and adjustments. South Bend Lathe Works.

☐ **79. SMALL METAL PARTS** Service is described in two-color 20-page booklet which gives pictorial presentation of products and services. Products include formed tubes, brackets, clips and clamps, cages, complete small machines, hand tools, precision stampings, spinnings, guards, and wide variety of parts and complete assemblies from parts. Facilities for design and model work described. V. E. Sprouse Co.

☐ **80. CLEANING PLASTIC GLASSES** — Three-page mimeograph tells how Plexi-Glyst meets requirements for cleaning plastic glass nose sections, canopies, gun turrets, domes, windshields. Cleans all plastic gloss. Will not injure skin or paint. Turco Products, Inc.

☐ **81. CARBON GAS BLACKS**—Convenient 28-page booklet with plastic binding describes the uses and properties of carbon gas blacks. Contains key reference chart. United Carbon Company.

☐ **82. PUNCH & DIE Assemblies**—Adjustable punch and die assemblies and their reuse in different pattern arrangements are covered in illustrated catalog which contains practical information on dies, production tools and special machinery. S. B. Whistler & Sons, Inc.

☐ **83. TURRET PUNCH PRESSES** With Gauge Tables—Short run piercing jobs, with material savings in die set-up and layout time. Operator changes from one die to another in 5 to 10 seconds. Presses range from hand operated bench types to power presses of 80 tons having 60" throat depths. 12-page catalog. Wiedemann Machine Co.

☐ **84. PAINTING, VARNISHING** and Finishing—Industrial and commercial interiors, structural steel and metal work, varnish finishes for floors and woodwork, painting or staining exterior surfaces, interior wood work and walls, and painting exterior surfaces are covered in 16-page book of "Architectural Specifications", with two pages of color chips. Sherwin Williams Co.

PURCHASING 205 EAST 42ND ST., NEW YORK, N. Y.

Please send me the "Know-How" Information checked.

65 ☐ 66 ☐ 67 ☐ 68 ☐ 69 ☐ 70 ☐ 71 ☐ 72 ☐ 73 ☐ 74 ☐

75 ☐ 76 ☐ 77 ☐ 78 ☐ 79 ☐ 80 ☐ 81 ☐ 82 ☐ 83 ☐ 84 ☐

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

5/43

SPEED UP ALL PRODUCTION DRILLING with these 3 SKILDRILLS!

The many other SKILSAW DRILLS give you a size and type for every drilling job!

● Everywhere SKILDRILLS are boosting War Production by boosting drilling output on every job! In aircraft plants SKILDRILLS speed up "skin-drilling" . . . on tank and engine assembly lines they "shoot holes" in drilling bottlenecks . . . throughout industry they're busy drilling *more holes in less time.* SKILDRILLS are light, compact, powerful . . . they get in tight places *easier* . . . go through tough metals *faster* . . . give you more drilling power and speed for every ounce of weight!

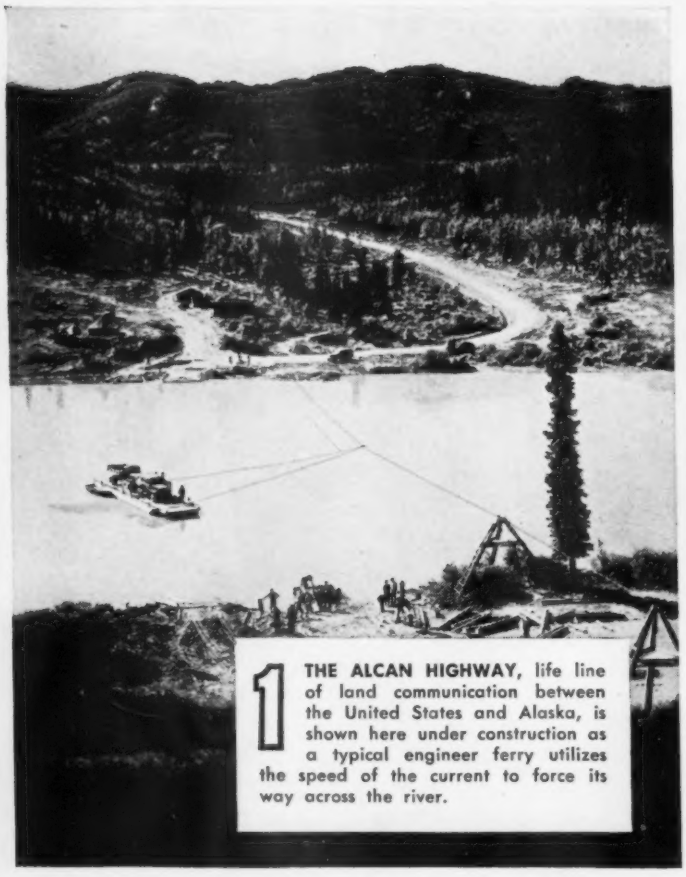
The features that make SKILDRILLS so superior are typical of the full line of SKILSAW DRILLS . . . a size and type for every job from fastest production drilling to heaviest boring and reaming. Ask your distributor to demonstrate SKILSAW DRILLS on your own work. . . today!

SKILSAW PORTABLE ELECTRIC TOOLS
★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★

SKILSAW, INC., 4761 Winnemac Ave., Chicago
New York • Boston • Buffalo • Philadelphia • Cleveland • Detroit
Indianapolis • St. Louis • Kansas City • Atlanta • New Orleans
Dallas • Los Angeles • Oakland • Portland • Seattle • Toronto, Canada

When writing Skilsaw, Inc. please mention Purchasing

FAMOUS LIFE LINES



1 **THE ALCAN HIGHWAY,** life line of land communication between the United States and Alaska, is shown here under construction as a typical engineer ferry utilizes the speed of the current to force its way across the river.

2 **MECHANIZED CAVALRY'S STEEL HORSES,** like these of the 107th Cavalry Regiment, as well as practically every other type of motorized military vehicle, have many of their "life lines" — fuel and lubrication lines, brake tubes, and other parts — of Bundy Tubing.

All Photos by U. S. Army Signal Corps

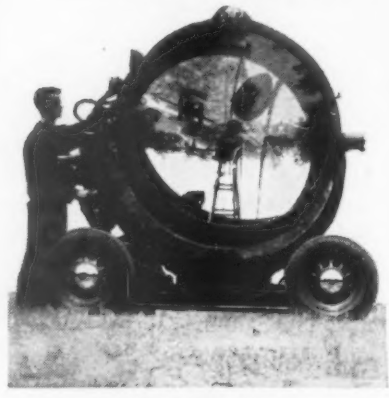
EVERY SECOND is a crisis when tanks clash in the desert or planes dive for the kill. There is no time for mistakes . . . no time for repairing faulty mechanisms.

Bundy Tubing fills an urgent role in providing vital lines for tanks, planes, PT boats, all types of fighting equipment.

Power boats, tandem rollers and Diesel engines depend on Bundy Tubing for fuel and lubrication lines. Hydraulic pressure is transmitted through Bundy Tubing for tank turrets and motor vehicles. Refrigerants for cooling ammunition and powder rooms pass through lines of Bundy Tubing. Structural or mechanical tubing is provided for radios, aircraft, gliders, tanks.

Wherever fuel and lubrication lines are needed, or where hydraulic pressure or refrigerants must be transmitted, Bundy Tubing is on the job.

We are proud that our product serves in so great a cause. We shall see to it that only the finest tubing Bundy can make goes into the equipment for our fighting forces. Bundy Tubing Company, Detroit.



U. S. ARMY SEARCHLIGHTS such as this more and more frequently have their "life lines" — lubrication lines for trailer and for power generating units — made from Bundy Tubing.

Buy U. S. War Bonds
Get in Your Scrap

BUNDY TUBING

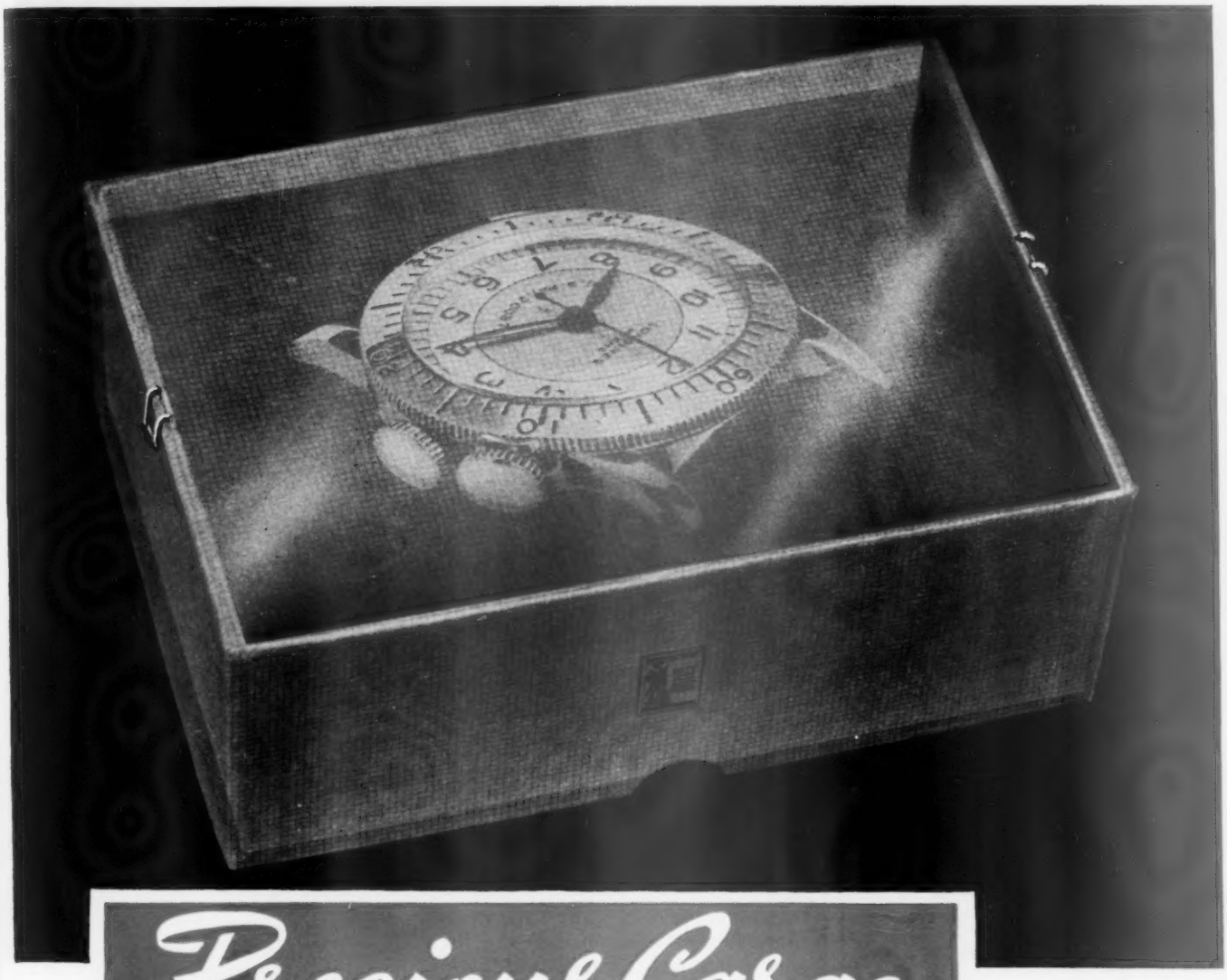
ENGINEERED TO YOUR EXPECTATIONS

BUNDYWELD double-walled steel tubing, hydrogen-brazed, copper-coated inside and outside. From Capillary sizes up to and including $\frac{1}{2}$" O. D. This double-walled type is also available in steel, tin-coated on the outside, and in Monel.

BUNDY ELECTRICWELD steel tubing. Single-walled — butt welded — annealed. Available in sizes up to and including 2" O. D. Can be furnished tin-coated outside in smaller sizes.

BUNDY "TRIPLE-PURPOSE" tubing. Double-walled, rolled from two strips, joints opposite, welded into a solid wall. Available in all Monel; all steel; Monel inside—steel outside; Monel outside—steel inside. Sizes up to and including $\frac{5}{8}$" O. D.

When writing Bundy Tubing Company please mention Purchasing



Precious Cargo

Longines-Wittnauer Watch Co., Inc.

THE WORLD'S MOST HONORED WATCH

For almost a quarter of a century Longines-Wittnauer have speeded their precious cargoes safely, quickly, and conveniently with

MASON MAILMASTERS

The MASON BOX COMPANY

ATTLEBORO FALLS, MASS. • 175 FIFTH AVE., NEW YORK CITY, N. Y.

When writing The Mason Box Company please mention Purchasing

Rawhide HAMMERS MALLETS

Carefully made, accurately balanced, with weighted heads where extra striking power is needed. Strike forceful blows without marring or battering, without recoil or bounce. Never split, chip, "smear" or crack, retain this true striking face so every blow goes right to the target . . . gets work done. Long wearing, mechanically cured, coiled Rawhide faces far outlast soft metals, plastics, wood or rubber.

Replaceable Heads

Replaceable Insert Faces are available for C/R Hammers . . . make each a "lifetime" tool.

C/R Hammers and Mallets are classified as *essential tools* for the manufacture and maintenance of aircraft and other military material.

Write for Catalog Sheets

CHICAGO Rawhide MFG. CO.
1284 ELSTON AVE. ★ CHICAGO, ILLINOIS.

F.O.B. filosofy of buying

AN item in the Lansing, Michigan, *State Journal* (March 16) reports that the City Fathers have decided, by a vote of 12 to 2, to abolish the office of City Purchasing Agent and let the various departments and bureaus do their own buying, as they did prior to 1931. The action is described as "an economy move preliminary to adoption of the city budget" and the report concludes with the comment that "Abolition of the office would save the taxpayers approximately $3,000 annually." Unless the record of the Lansing department is diametrically opposite to that of the scores of municipalities and counties where centralized purchasing is proving itself as the economical and businesslike way of controlling public expenditures, this sounds like reasoning in reverse. But if this represents the policy of the administration, we respectfully suggest that they could logically save many times $3,000 by abolishing the fire and police departments and other safeguards of the public property.

• •

AND while on the subject of rebuttals, we note that one of the Boffey prize papers in the recent N.A.P.A. educational contest states that "There is . . . considerable basis for the contention that (the job of dealing with priorities and allocations) is not at all a purchasing function, but an entirely different and separate one from that of purchasing." This comment follows the writer's observation that "gradually, and under the pressure of circumstances" companies have put this responsibility—"initially at least, and permanently in most cases"—into the purchasing department. Now a great many purchasing men would be glad indeed of some good and logical reason by which they could be relieved of priorities responsibility. But the fact remains that priorities are primarily a tool of procurement, and so long as this type of regulation and control is required in handling the equitable distribution of materials, practical business is likely to recognize this pressure of circumstances, and assign the priorities job where it belongs. It may be a big enough job to require the special attention of a priorities man or a priorities staff, but they still belong in the purchasing department.

• •

AND while on the subject of preference ratings, N.A.P.A. gets into the spirit of the times in announcing its recommendations for the proper clothes to wear at the forthcoming convention:

Uniforms:	AAA
Business suits:	AA-1
Tuxedos:	A-10
Tails:	B-10

A footnote further explains: "That goes for all of our convention meetings—Informal and Informational."

• •

ONE of the most poignant signs that have come to our attention in these harried times is the one reproduced at the foot of this page. It was picked up in a Chicago office. Purchasing men should be duly grateful at this solicitude on the part of management in recognizing the woes of the buyer.

• •

MANY time-honored attitudes have gone into reverse in these times, but we never suspected that the traditional hospitality of hotels and chambers of commerce

DO NOT STARE AT OUR PURCHASING AGENT

Some day You Yourself might be Completely Nuts

would be affected. Yet delegates to the Midwinter Conference of the Public Utility Buyers Group last month were startled to walk into the lobby of Detroit's Statler Hotel and find themselves confronted by an oversize poster admonishing them to

AVOID DETROIT !

The explanation is that the Motor City was just getting ready to entertain a big chemical meeting, and it was apparent that facilities would be taxed to the utmost.

• •

ONE of the governmental representatives at that conference explained why the orders from Washington are so difficult to interpret. His reasoning is that (1) the orders become part of our national law; (2) therefore they must be couched in legal language; (3) legal procedure requires a statement of what can *not* be done, rather than what *can* be done; (4) therefore the regulations must be expressed in negatives, and any positive action has to be inferred, by interpretation. The process has gone so far that one recent order contains the grammatical monstrosity of a triple negative. If our memory of early struggles with syntax is reliable, the second negative would have made a positive statement, so the third one would bring us out where we started, and all in good legal negative form. At this point, a bouquet of orchids may be in order for Price Administrator Prentiss Brown, one of whose early decisions is that OPA's 2,700 lawyers no longer have final and veto power in the phrasing of the regulations proposed by the more direct and practical business minds of the Office. Perhaps they will be easier to understand from now on.

• •

MANPOWER Note: From Peyton Chenault, P.A. and employment manager of the Federal Reserve Bank at Dallas, comes an interesting episode bearing on the manpower situation, as reported in the current issue of *Southwestern Purchaser*. A recent caller at Mr. Chenault's office was interviewed and promptly put to work. One of the routine questions asked during the interview was, "How did you happen to apply here?" The rather surprising reply was: "I didn't come down here for a job. I just wanted to talk to your Mr. X about an investment I had, and he suggested that I come up and talk to you."

BEWARE of Wire Rope "Gremlins"

GREMLINS—those sly imps who delight in bedeviling our flying forces —will also get your wire rope if you don't watch out.

The way to combat these little troublemakers is to give your wire rope constant and proper care. Be on the alert at all times. *Guard especially against the following conditions, which are common causes of premature wire rope failures:*

1. Improper or insufficient lubrication
2. Using wire rope of incorrect size, construction or grade
3. Improper selection of sheaves
4. Improper care of sheaves
5. Sheaves out of line
6. An inadequate factor of safety
7. An excessive fleet angle
8. Sudden jerks or pulls
9. Kinking

The importance of using all means and methods of increasing wire rope efficiency — thereby saving steel for other vital purposes — cannot be overemphasized. Our experienced Engineering Department is at the service of all wire rope users. Feel free to write us about any wire rope problem which may be giving you trouble.

A. LESCHEN & SONS ROPE CO.
WIRE ROPE MAKERS — ESTABLISHED 1857
5909 KENNERLY AVENUE — ST. LOUIS, MISSOURI, U. S. A.

NEW YORK • • • 90 West Street
CHICAGO • • 810 W. Washington Blvd.
DENVER • • • 1554 Wazee Street
SAN FRANCISCO • • 520 Fourth Street
PORTLAND • • 914 N. W. 14th Avenue
SEATTLE • • 3410 First Avenue South

HERCULES RED STRAND WIRE ROPE

When writing A. Leschen & Sons Rope Co. please mention Purchasing

EGYPTIAN FINISHED EGGS FOR TOJO'S FINISH

To make sure that our bombs for victory will reach Tokio, Berlin and other desired destinations in perfect condition, we recommend coating them with EGYPTIAN lustreless enamels meeting **U.S. GOV'T SPECIFICATION FINISH 3-162B** expressly developed for all types of fragmentation, demolition and incendiary bombs, bomb fins, practice bombs and other ammunition components.

Consider these four advantages of EGYPTIAN S-162B:

1. Application by dip or spray directly on clean bare metal. No primer.
2. Air dries quickly at room temperature.
3. Complete hiding by one dip coat.
4. Obtainable in a variety of "spec" colors.

Prompt delivery of trial or production order.

Send for 1943 Edition of our U. S. Gov't "Spec" Book P

These are a few of the more important Government "Spec." finishes which we can furnish. For more complete list with descriptions send for "Spec." book.

3-67E	3-162B
14080	14105B
14120	JQD-144A Tentative
E-5e	196-131-59
P-27-b-2	3-163
3-86A	3-165A
52-P18 (Int)	M-485b

HOMB-ES-680a Tentative
AXS-736 Rev 1 Tentative
AN-TT-P-656 Amend 1
AN-TT-E-501
AN-TT-D-514
PXS-783 Rev 3
PXS-979 Rev 1

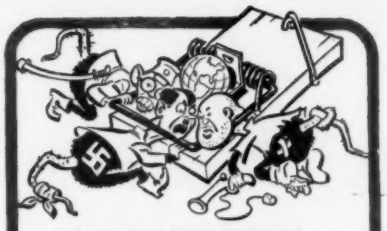
THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER, NEW YORK, N. Y.

EGYPTIAN FINISHES

EGYPTIAN
Superior FINISHES

When writing The Egyptian Lacquer Manufacturing Co. please mention Purchasing

Some Evening, Spring This on Yourself

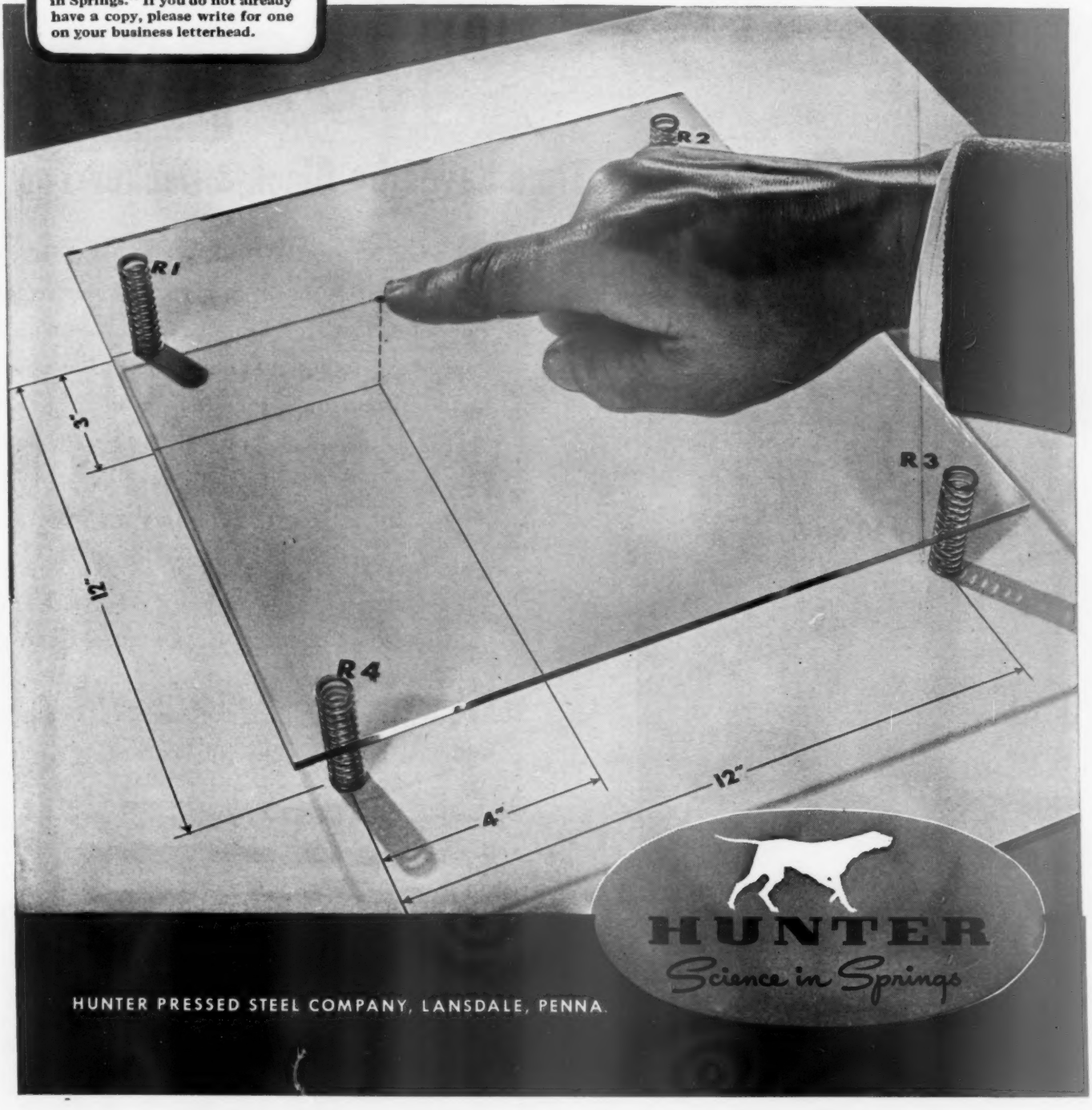


ACH, SCHPRINGTIME!

We don't make the type of spring required above, but we do design and make many another needed for war equipment to catch the Japanazis. Many important curves, charts, and formulas for developing essential springs are contained in our booklet, "Science in Springs." If you do not already have a copy, please write for one on your business letterhead.

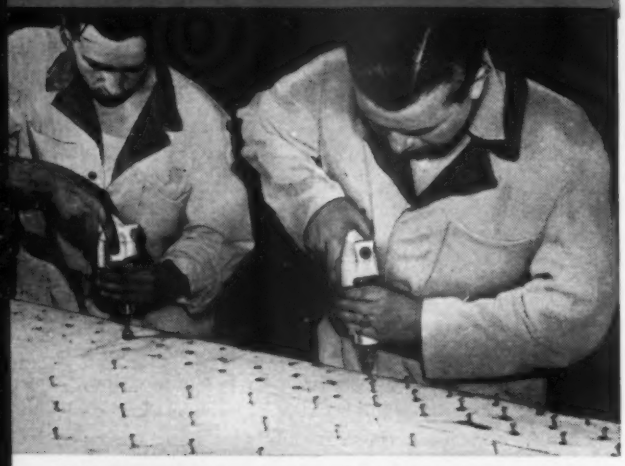
LIKE brain-twisters? Some evening, then, when you're in the mood, take a crack at this one: Imagine a square plane supported at the corners by equal springs. Place your finger at any point on the board and press downward. For the sake of argument, assume you push with a force of ten pounds, that the springs are centered, a foot apart and the spot you have pressed upon is 3″ one way and 2″ the other way from the center. Can you figure the proportion of the load shared by each spring? The practical equivalent of the problem is found, for example, in the design of springs for applications requiring vibration or shock isolation. The answer looks deceptively easy, but it will challenge you, may even plague you. From a spring maker's viewpoint it is a problem of springs working in combination, a worthy example of our experienced knowledge that there is only ONE right spring for your job. We can produce it for you.

WHAT DO YOU NEED? ... *A spring manufacturer with adequate capacity to do your job now? Help in designing springs as well as manufacture? If it's essential for the war, get in touch with us.*



When writing Hunter Pressed Steel Company please mention Purchasing

DRILLING & SCREW DRIVING



Holgun and Scrugun—a perfect high-speed production team for turning out PT Boats. They're used for thousands of drilling, countersinking and screw driving operations on the hull of each boat.

HAMMERING IN CONCRETE

"Saved 2100 Man-Hours on this war housing project." That's a report on Black & Decker Electric Hammers—which drilled a half-million holes in concrete to fasten metal fixtures for partitions.

HIGH SPEED NUT RUNNING

A Time Saving of 73% resulted when Black & Decker Nut Runners tackled the job of assembling gas mask parts. Nut running time was cut from 15 to 4 seconds per unit. Production increased 250%.

Smoothing Rough Castings like this for heavy marine use, and sanding the sleek hulls of Uncle Sam's mosquito fleet, are among the many wartime uses of B & D Portable Sanders and Grinders.

"Peacetime" Tools Now Weapons

Time Saved by Black & Decker Tools

BLACK & DECKER Portable Electric Tools—used by peacetime industry for decades, now are "weapons of war"—helping speed the output of fighting equipment on all production fronts. Pictured on this page are a few of the many ways in which Black & Decker Tools are saving precious time—WAR time. From war plants all over the country come such reports as:

"60% time saving with Black & Decker Die Grinders and Sanders" . . . "Built our entire production around Black & Decker Drills, Screw Drivers and Quick-Saws" . . . "Production up 60% on one job with Heavy Duty

GRINDING & SANDING

# of War!

helps Win Battle of Production

Drill" . . . "Time saving of 60% with Black & Decker Bench Grinder" . . . "Sheet metal cutting 75% faster with Black & Decker Lectro-Shears" . . . "Thank you for the assistance in setting up our new production line."

Reports like these present a clear picture of American free enterprise in action . . . of close cooperation between war producer and tool supplier . . . of free men pooling their ingenuity and efforts to turn out "what it takes" to win this war.

If you want Expert Help

Phone your nearby B & D Distributor if you want expert help on any tooling problem you may have. He's your dependable, convenient source of supply and tool information. The Black & Decker Mfg. Co., 764 Pennsylvania Ave., Towson, Maryland.

ARMY E NAVY

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS

Countless hours

are saved in aircraft plants, where Black & Decker Drills bore millions of holes in metals, wood and plastics. Here's a ½" Heavy Duty Drill boring beams of shipping crates, to carry fuselages overseas.

WALSEAL
...serves well because it "fits the service"
WALSEAL Fitting
Oxyacetylene Flame
The SIL-FOS BRAZING ALLOY flows over the entire clearance area, making a joint that is stronger than the pipe.
White ring of SIL-FOS appearing all around the pipe at this point is your visible evidence that the joint is made—and made right.

Vibration proof, corrosion resistant, and leakproof! Yes, a Silbraz Joint made with Walseal Flanges, Fittings, or Valves has the inherent stamina to withstand the incessant shaking, the moisture, the changing temperatures, and inevitable knocks of war-time service. Tens of thousands of Walseal products are proving beyond dispute that they truly make a "one-piece pipe line." A Silbraz Joint cannot creep or pull apart under any temperature to which brass or copper pipe can be safely subjected.

Today Walseal is "all out" for war. In the peace to come the use of Silbraz Joints for assembling non-ferrous piping will continue to expand. Walseal Flanges, Fittings, and Valves have the added advantage of being installed easily even in cramped quarters.

You'll find complete information on Walseal products in the new Walworth Catalog 42 on pages 230 to 242, inclusive.

• • •

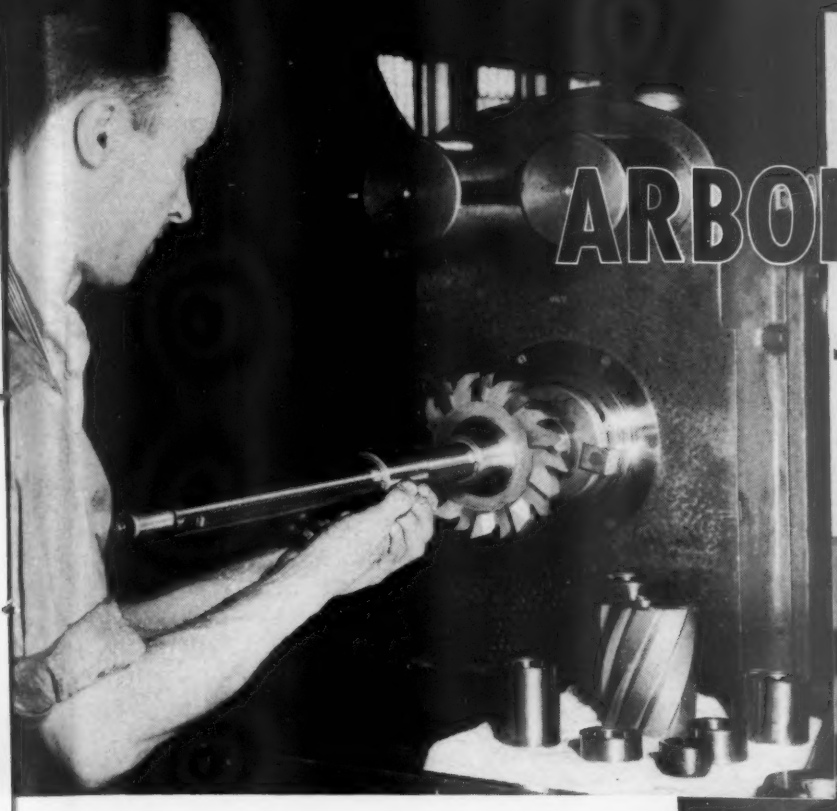
If you want a copy of this up-to-date catalog of Walworth Valves, Fittings, Pipe, and Pipe Wrenches, write for it on your business letterhead. Address: Walworth Company, Dept. 51, 60 East 42nd St., New York, N. Y.

BOSTON WORKS
KEWANEE WORKS

WALWORTH
valves AND fittings

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

When writing Walworth Company please mention Purchasing



USE YOUR ARBORS PROPERLY

— to help speed production

It takes the best utilization of arbor equipment for cutters and machines to achieve maximum production. Do all in your power to keep these vital tools in service when replacement is so difficult.

Follow these simple precautions to keep them on the job —

BEFORE INSERTING any arbor in a machine, clean dirt or chips from the shank and from the machine taper hole — thereby assuring proper seating. This provides a true drive. It's a must to obtain accurate work and prevent excessive cutter wear.

CLEAN THE FACES of the sleeves and bushings to provide accurate running.

BE SURE arbor is well supported and of ample diameter.

ALWAYS use a cutter driving key to prevent slippage and consequent damage to cutter, arbor, or work.

Except on very short arbors and those of Shell End Mill type, **DO NOT TIGHTEN** the arbor nut until the arbor is supported by a yoke. Such abuse results in distorted arbors.

BE CAREFUL not to run the work or some part of the machine into an arbor. Such action may spring it and cause damage to cutting tools.

WHEN NOT IN USE, arbors should be kept in racks where they may be found easily and not subject to injury from other heavy or sharp tools.

Your conservation of arbors will help you do more and better work and will result in increased cutter efficiency and longer machine life. It's **another** way to help in the united war effort.

We are proud to be honored with the Navy "E", awarded for outstanding accomplishment in Defense production.

Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

Reproductions of this advertisement for use on your bulletin board furnished on request.

BROWN & SHARPE

How

CAN YOU TELL THAT IT'S MOLDED INSUROK?

You can tell *by the way it performs.* Appearance, alone, may be deceiving as it gives no indications of the physical or electrical characteristics of this part or one that may look just like it.

Men in ground crews, using portable flood lighting, and portable electrically driven tools know that heat and moisture have no effect on this Molded INSUROK electrical commutator. They know that it is sturdy—that it hangs on to all its intricate metal inserts like a vise.

In the development of this part, Richardson Plasticians suggested the grade of INSUROK best suited for this particular use—suggested it because it has the necessary dielectric and low moisture absorption properties—adequate heat resistance—and a good bonding reaction with the metal inserts.

Richardson Plasticians are continually recommending the grade of Molded or Laminated INSUROK best suited to meet various combinations of specifications. They will be glad to suggest the commercial or special grade which will meet *all* the conditions under which your present or plan-stage product will perform. Write for complete information.

INSUROK

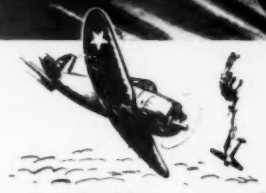
Precision Plastics

The RICHARDSON COMPANY

MELROSE PARK, ILL. LOCKLAND, OHIO FOUNDED 1858 NEW BRUNSWICK, N. J. INDIANAPOLIS, IND.
SALES OFFICES 75 WEST ST. NEW YORK CITY G. M. BUILDING, DETROIT

When writing The Richardson Company please mention Purchasing

RUBBER ARMOR against DEATH



TWENTY . . . THIRTY . . . forty thousand feet up! Where the air is cold, and thin . . . and deadly. Where no bird, no living thing *can* live.

Yet men, our men, live! . . . and fight! . . . and return to earth to tell of war-plants blasted and enemy planes sent to reeling, smoking, blazing destruction.

Rubber, raw and synthetic, molded and shaped into the most efficient high-altitude oxygen masks ever designed, makes such feats possible.

It is a matter of pride to us that we have had a share in the development of these masks through our collaboration with scientists of the N. D. R. C. and the Army Air Force; and that we have been able to increase our plant facilities to meet the service requirements in the production of this all-important piece of equipment.

We ask you to remember that the same experience and engineering ability which are behind this accomplishment are at your service whenever there is a need for precision-molding of goods from raw or synthetic rubbers.

ACUSHNET

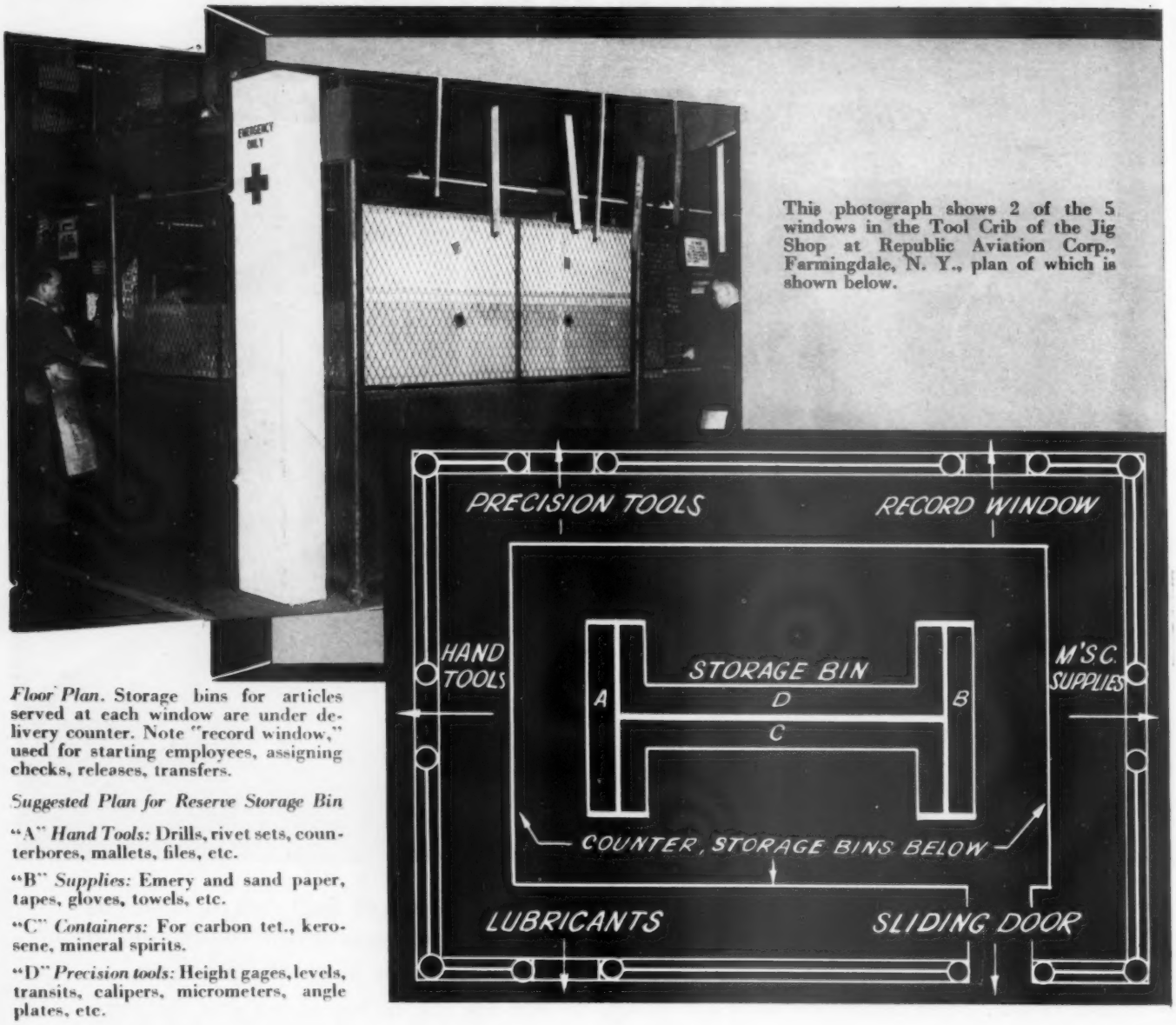
PROCESS COMPANY

New Bedford • Massachusetts

MAKERS OF PRECISION-MOLDED RUBBER GOODS

When writing Acushnet Process Company please mention Purchasing

More Windows IN YOUR TOOL CRIB



This photograph shows 2 of the 5 windows in the Tool Crib of the Jig Shop at Republic Aviation Corp., Farmingdale, N. Y., plan of which is shown below.

Floor Plan. Storage bins for articles served at each window are under delivery counter. Note "record window," used for starting employees, assigning checks, releases, transfers.

Suggested Plan for Reserve Storage Bin

"A" *Hand Tools:* Drills, rivet sets, counterbores, mallets, files, etc.

"B" *Supplies:* Emery and sand paper, tapes, gloves, towels, etc.

"C" *Containers:* For carbon tet., kerosene, mineral spirits.

"D" *Precision tools:* Height gages, levels, transits, calipers, micrometers, angle plates, etc.

LESS *Waiting Time* FOR YOUR MEN

HERE's a tool crib with five windows — one for every class of tools and supplies. It's big, but the management finds that it pays big returns — by reducing waiting time for men and "down" time for machines.

Your layout may not need to be so elaborate; but careful planning of your tool crib to assure free movement and systematic order always results in longer life and more effective use of your tools.

GTD GREENFIELD

TAPS · · · DIES · · · GAGES · · · TWIST DRILLS · · · SCREW PLATES

ARMY E NAVY

GREENFIELD TAP AND DIE CORPORATION

GREENFIELD, MASSACHUSETTS

DETROIT PLANT: 5850 Second Blvd.

WAREHOUSES in New York, Chicago, and Los Angeles

In Canada: GREENFIELD TAP AND DIE CORP. OF CANADA, LTD., GALT, ONT.

Tool Conservation Begins in the Tool Crib

When writing Greenfield Tap and Die Corporation please mention Purchasing

ARMY E NAVY

Back to the Scrap Pile!

Proudly we fly the Army and Navy "E" flag and stars, awarded and re-awarded for excellence and proficiency in the production of war materiel.

Kropp Forge Company

Makers of Drop, Upset and Hammer Forgings for Ships, Guns, Planes, Tanks, Ordnance and Machine Tools.

"World's Largest Job Forging Shop"

5301 W. Roosevelt Road
Chicago, Ill.

Engineering Representatives in Principal Cities

SERVING INDUSTRY SINCE 18 31 OVER 100 YEARS
K
KROPP FORGE CO.

In no other arm has greater advancement been made since 1918 than in anti-aircraft guns, which were lightly regarded by flying men previous to this war. These guns, which are knocking many enemy planes out of the skies today, are much more accurate, higher-ranged and far more deadly. Here, again, improvement has been achieved to a large extent through the broader use of better materials, including tough forgings for the parts of gun and mount which must withstand the most severe stresses and impacts.

At Kropp Forge, we are turning out an endless volume of super-tough forged parts for modern anti-aircraft guns, as well as for other ordnance, tanks, planes, ships and essential war machinery. Recent plant expansion gives us the ability as well as the will to produce even more forgings for the war effort.

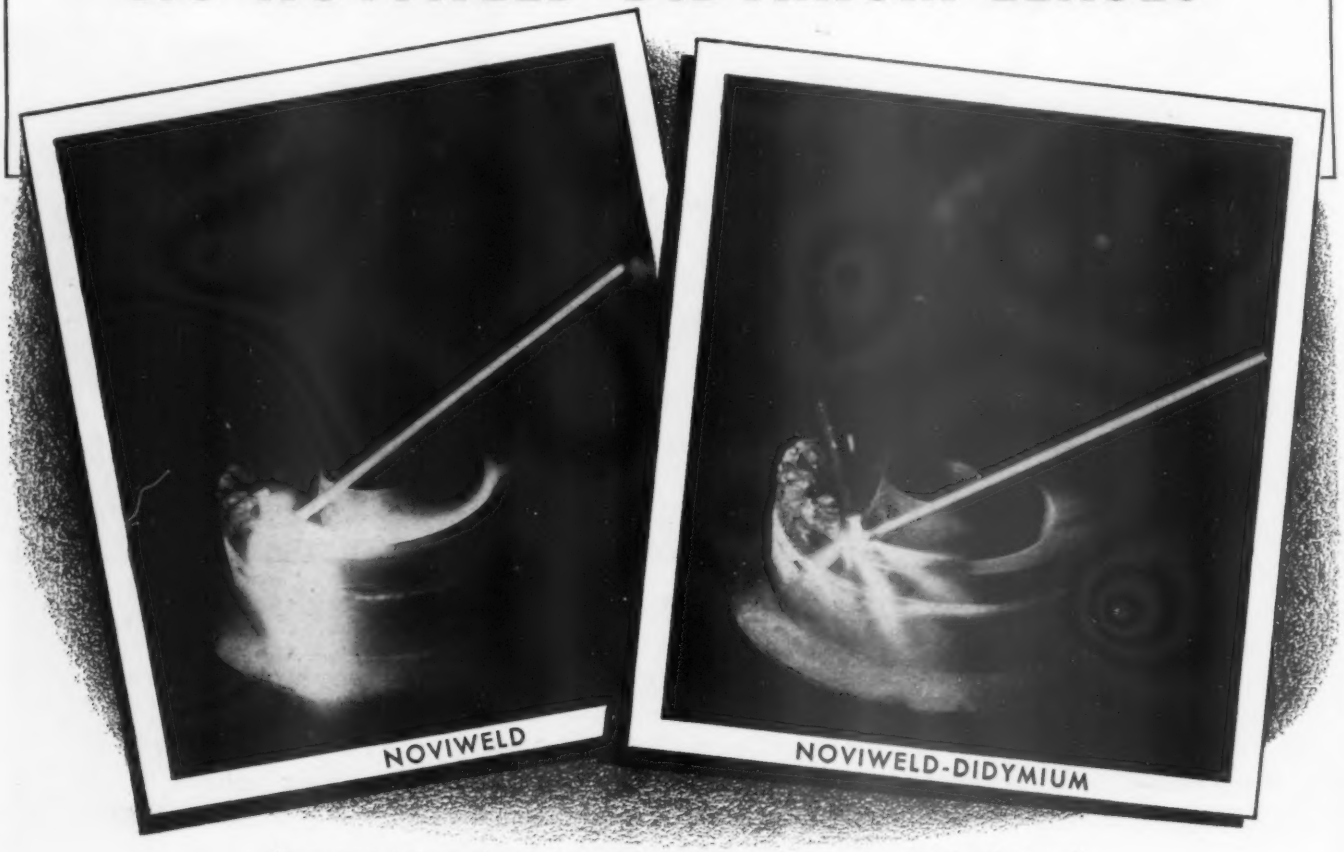
The inquiries of armament and war machine makers are solicited.

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

KROPP

When writing Kropp Forge Company please mention Purchasing

These unretouched Pictures show you why welders do better work with AO NOVIWELD-DIDYMIUM LENSES



The unretouched photograph, at right, instantly shows that welding goggles equipped with Noviweld-Didymium Lenses enables a flame-welder to look right through the cloudy yellow flame of burning sodium vapors and see the rod and molten area more clearly. This clearer vision greatly increases his efficiency, allows him to do more and better work, gives him greater protection and comfort.

... and NOVIWELD-DIDYMIUM LENSES offer you all these other advantages, too...

Noviweld-Didymium Lenses are considered by many who have tested them, to be the greatest welding glass *ever* developed! *That's* how important they are to your company . . . and to war production.

REMEMBER: AO Noviweld-Didymium absorbs Sodium flare and *also* protects welders' eyes against BOTH ultra-violet and infra-red radiation, meeting the Bureau of Standards Safety Code Specifications in both of the latter respects.

And, in addition, Noviweld-Didymium has the following *other* advantages: it preserves orange and red color values, enabling the operator to see red-hot bead and molten area in brilliant color, it is ground and polished to ophthalmic standards of quality, *and* present stocks indicate *immediate delivery* in shade numbers 4, 5 and 6 for welding goggles.

Behind Noviweld-Didymium are American Optical Scientists and the achievements of the AO Laboratory . . . the same laboratory that has contributed so many other outstanding developments to welding eye protection and *better* welding.

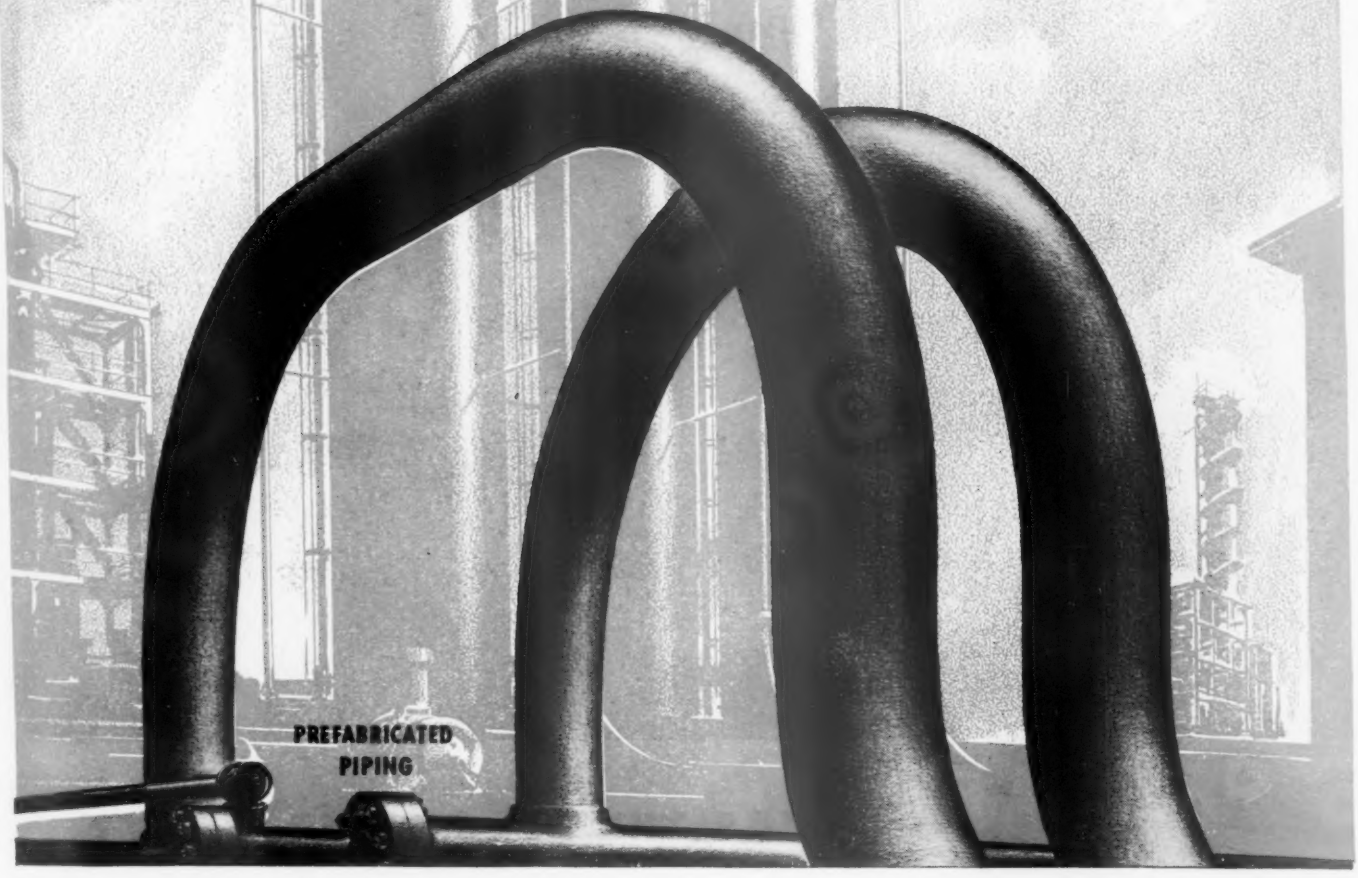
Don't wait . . . get in touch with your nearest AO Branch Office today for a convincing demonstration of how Noviweld-Didymium allows both skilled and inexperienced flame-welders to do better work.

American Optical
COMPANY
SOUTHBRIDGE, MASSACHUSETTS

When writing American Optical Company please mention Purchasing

FLUID TRANSPORT

The Nation's 5th Carrier...



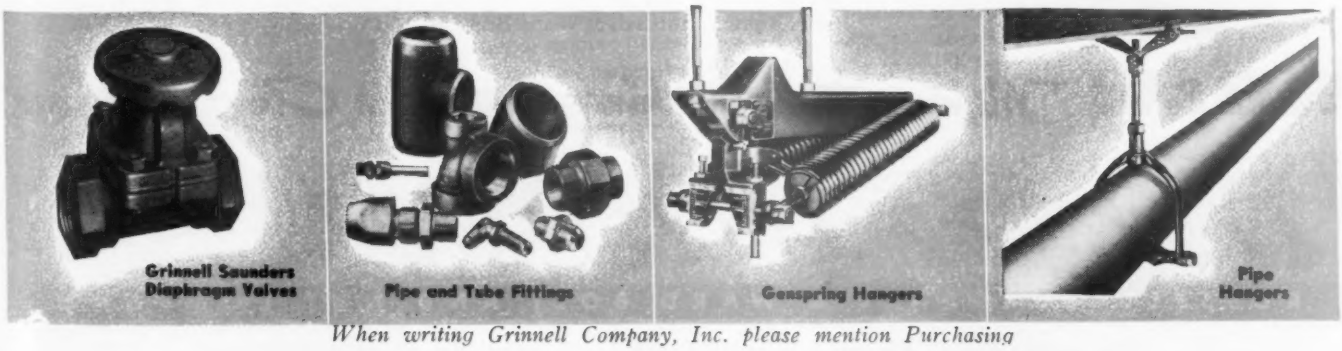
REMOVE THE PIPING FROM A PETROLEUM REFINERY and what have you left? From well to tank car an unfathomable maze of piping provides FLUID TRANSPORT.

Here, as in scores of other industries, the piping formula is made up of such components as: materials to be carried, heat, cold, expansion, contraction, pressure and corrosion. Grinnell provides the specialized engineering combined with the manufacture and fabrication of the many connecting links needed to convert a pile of pipe into a complete *piping system.*

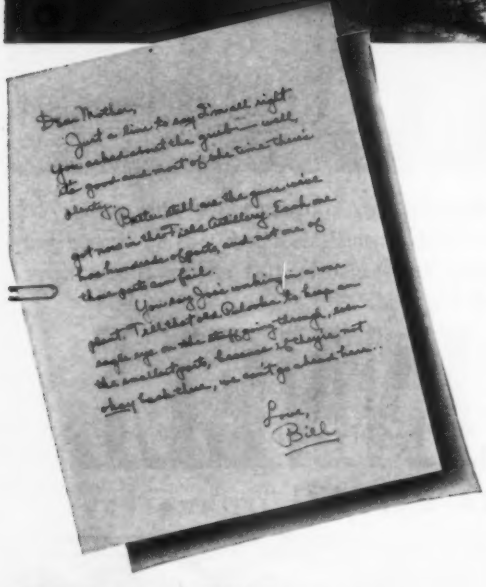
For war construction, or maintenance and repair of existing piping, call Grinnell Company, Inc. Executive offices, Providence, R. I. Plants and offices throughout United States and Canada.

GRINNELL

WHENEVER **PIPING** IS INVOLVED



When writing Grinnell Company, Inc. please mention Purchasing


Dear Mother,
Just a line to say I'm all right.
You asked about the gun — well,
it's good and most of the time it's
steady.
Better tell you the genuine
gat now in that little Christmas. Each one
has a number of parts, and not one of
them gets out of kilter.
You say Jane is making a war
plant. Tell her she'll do a lot of
swell jobs on the 450 parts, even
the smallest parts, because if anything is not
okay back here, we can't go ahead here...
Love,
Bill

WAS THE 72nd YOUR BABY?

THE SMALL metal parts many of us are working on today may be in Tunis next month. If they don't do their job, boys like Bill may never cross the ocean again.

Parts like EMPIRE bolts and nuts, for example. Shipped by carloads, each one must fit, tighten easily, stand up under fire. They must move *fast* — or war equipment will move slowly.

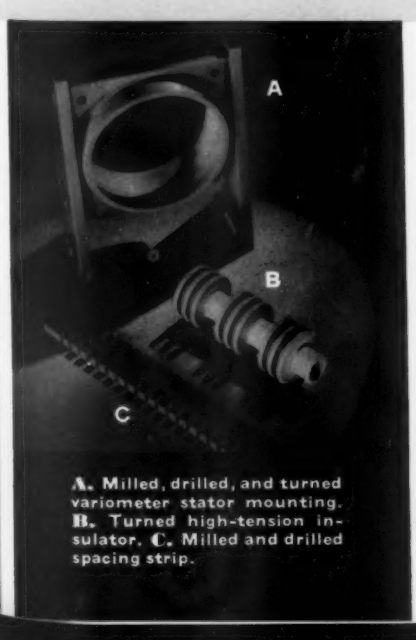
Here, at R B & W, machines of our own design are improving the strength of metal, cold-reducing Empire bolts, cold-forging the threads, cold-punching Empire nuts, repunching to insure perfect fit. To this inventiveness, we're adding *personal care* to make quite sure no weapon fails or waits because of us.

★ If you, too, are making vital "bits and parts", we'll send you posters made up from this ad—omitting any reference to us. They're free. Just write Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

RB&W *Making strong the things that make America strong*

When writing Russell, Burdsall & Ward Bolt and Nut Company please mention Purchasing

Voice of the A. E. F.



A. Milled, drilled, and turned variometer stator mounting. **B.** Turned high-tension insulator. **C.** Milled and drilled spacing strip.

SECONDS after the U. S. landing in Africa, orders to troops were winging their way by portable radio. There are dozens of applications for Synthane as insulation in radio equipment of this kind. Most important use is to prevent undue loss of minute high-frequency currents.

Long before Synthane entered the armed services it was valued for its many combined properties—resistance to corrosion from solvents, acids, salts and water . . . structural strength . . . light weight (half that of aluminum) . . . hardness, excellent insulating characteristics, and ease of machining. Some day it will return again to civilian ways, with more uses, it now seems certain, than ever before. Meanwhile, keep posted on Synthane with information such as you will find on the back of this page.

SYNTHANE CORPORATION, OAKS, PENNSYLVANIA

Plan your present and future products with Synthane Technical Plastics

SHEETS • RODS • TUBES • FABRICATED PARTS **SYNTHANE** SILENT STABILIZED GEAR MATERIAL

Bakelite— laminated

Corrosion-Resisting SYNTHANE

SYNTHANE, a laminated phenolic plastic, may be more familiar to you for its physical, mechanical and electrical properties. More recently, through research and development, grades of SYNTHANE have been found of great value as corrosion-resisting materials. Parts made from SYNTHANE have successfully resisted the effects of corrosive waters and atmospheres, chemical salts and solutions, solvents, gasolines, oils, greases, and other petroleum products. The corrosion-resisting possibilities of SYNTHANE for your application may be well worth examining. Only by examination can they be accurately determined.

SYNTHANE is available in sheets, rods, and tubes, fabricated parts, and in parts made by molding the impregnated base materials.

Corrosion-Resistance Factors

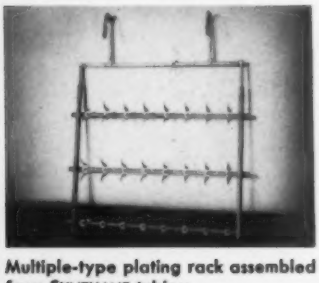
The corrosion resistance of any material is usually relative. The degree of corrosion resistance depends generally upon a combination of factors —the nature, concentration, and temperature of the chemical or corrosive agent, time of exposure, degree of agitation, and moisture absorption and chemical reactivity of the material itself.

For example, 10% solutions of either sulphuric acid or potassium dichromate have little effect on SYNTHANE. But if the two are mixed in the presence of organic matter, a vigorous oxidizing action occurs which will destroy any synthetic resin.

Corrosion-Resistance Economics

SYNTHANE is not immune to all corrosion conditions. Nor is any material. Yet it need not be 100% corrosion-proof to be economically practical.

In many instances SYNTHANE is used—not because it is completely corrosion-proof—but because it retains its size, shape and strength and has a longer life per dollar invested than other materials, taking into consideration labor and material for the original installation and the cost of replacements.



Multiple-type plating rack assembled from SYNTHANE tubing

Corrosion-resisting piping and couplings made from SYNTHANE

Base Materials

Selection of the base material must be made with care since in nearly every case it is the base rather than the resin that is first affected.

Cotton cloth base is satisfactory for weak acids, weak bases and low concentrations of salts, or neutral salts in any concentration. Asbestos base is used for strong alkaline conditions or highly concentrated salt solutions which tend to hydrolyze or split into alkaline radicals. Asbestos is not recommended for acids or acid salts even in low concentrations. Glass cloth base is recommended for strong concentrations of acids or acid salts, and is excellent for those conditions. Special corrosion-resisting resins are used for corrosion-resisting SYNTHANE.

When to Use Synthane

We prefer to examine each application individually. If a previous experience does not approximate yours, laboratory and commercial tests will be made to reach a solution profitable and practical in your case.

The Effect of Chemicals

In general, any concentration and temperature up to 180° Fahr. of the salts of the following metals will not affect SYNTHANE except to produce a slight change in its color:

Aluminum	Copper	Mercury
Barium	Iron	Nickel
Bismuth	Lead	Silver
Cadmium	Magnesium	Tin
Cobalt	Manganese	Zinc

Calcium (except hypochlorite)
Potassium (except hydroxide)
Sodium (except hydroxide and hypochlorite)

Synthane Also Resists the Following Solvents:

Aliphatic hydrocarbons	Ketones at room temperature
Aromatic hydrocarbons	Alcohols, esters and ethers

Chlorinated hydrocarbons (except those which have hydrolyzed; for example, carbon tetrachloride in the presence of moisture)

Synthane Will Not Resist:

Chlorine gas, wet or dry
Sodium hypochlorite
Chlorine water
Sodium hydroxide over 2%
Potassium hydroxide over 2%
Calcium hypochlorite
Bromine and bromine water
Pyridine

SYNTHANE will resist the following acids at the concentrations noted at room temperature:

Acetic 50%	Formic conc.
Benzoic conc.	Hydrochloric 10%
Boric conc.	Hydrofluoric 20%
Phenol 10%	Lactic conc.
Chromic 45% (special resin required; intermittent exposure as in plating)	Nitric 2%
	Oleic 5%
	Oxalic conc.
	Phosphoric 10%
	Sulphuric 15%
	Sulphurous 6%

Citric conc.

Note: The addition of salts such as 20% sodium sulphate to 10% sulphuric acid is known to inhibit the effect of the acid for a long period of time.

A mixture of sodium hydroxide 10% and sodium cyanide 10% also shows this phenomenon. This concentration of sodium hydroxide alone would rapidly attack SYNTHANE.

Standards of Quality Corrosion-Resisting Synthane Sheets

GRADE	C-CR Coarse Weave Fabric Base	L-CR Fine Weave Fabric Base	AA-CR Asbestos Cloth Base	A-CR Asbestos Paper Base	GLF Glass Cloth Base
TENSILE STRENGTH (1) Lbs./Sq. In.	9,500	9,000	10,000	8,000	16,000
TRANSVERSE STRENGTH (1) Lbs./Sq. In.	20,000	20,000	20,000	16,000	20,000
COMPRESSIVE STRENGTH (1) Lbs./Sq. In.	38,000	35,000	38,000	36,000	40,000
DIELECTRIC STRENGTH (2) Volts per mil (.001") Short-Time Test	200	200	50	225	350
Step-by-Step Test	120	120	30	135	250
POWER FACTOR (3) at 1,000,000 Cycles	.10	.10	.15	.10	.026
DIELECTRIC CONSTANT (3) at 1,000,000 Cycles	7.0	7.0	7.5	7.0	5.9
DIELECTRIC LOSS FACTOR (3) at 1,000,000 Cycles	.70	.70	1.12	.70	.10–.25
% WATER ABSORPTION (4)	1.7	1.4	.85	.85	1.2
ROCKWELL HARDNESS	M105	M105	M110	M110	M115

The values above represent average for standard grades.

Methods Used in Testing Synthane

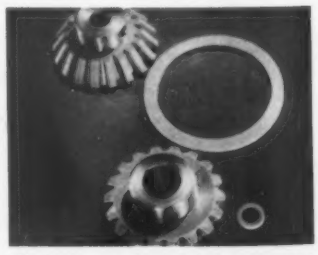
(1) Tests were made on $\frac{1}{8}$" thickness at room temperature, approximately 25 deg. C., following the American Society for Testing Materials Method D-229-42.

(2) Tests were made under oil on $\frac{1}{16}$" thickness, according to American Society for Testing Materials Method D-149-40T. (For grade AA-CR, $\frac{1}{8}$" thickness was used.)

(3) Tests were made on $\frac{1}{16}$" thickness at a frequency of 1,000,000 cycles, according to American Society for Testing Materials Method D-150-42T.

(4) Tests were made on pieces 3" x 1" x $\frac{1}{8}$" thick, according to the American Society for Testing Materials Method D-229-42 after immersion in water for 24 hours at approximately 25 deg. C plus or minus 2 deg. C.

SYNTHANE molded-macerated valve ball for oil well equipment



Washers and molded-macerated gears for rayon machinery

PLAN YOUR PRESENT AND FUTURE PRODUCTS WITH SYNTHANE TECHNICAL PLASTICS

SYNTHANE

Bakelite—laminated

SHEETS-RODS-TUBES-FABRICATED PARTS-SILENT STABILIZED GEAR MATERIAL

SYNTHANE CORPORATION, OAKS, PENNA.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

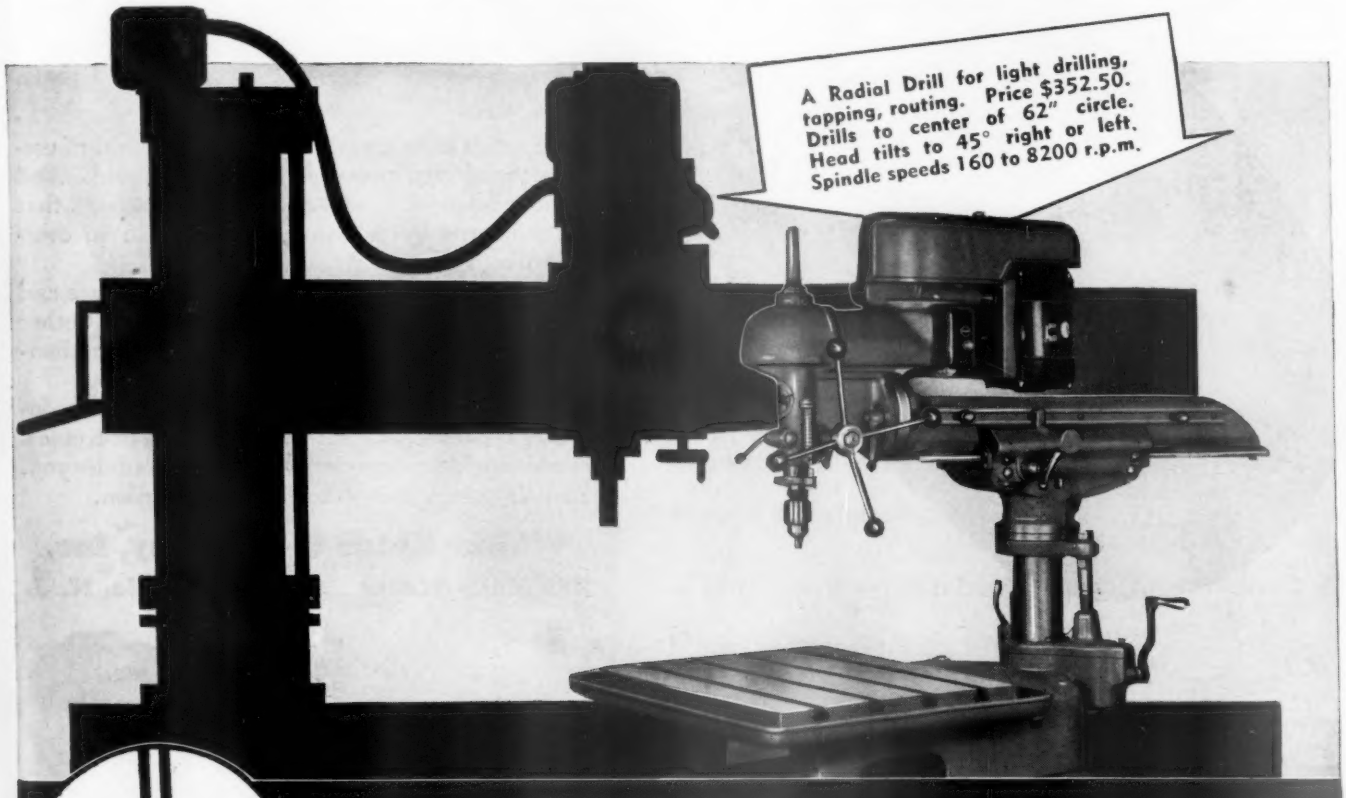
THERE'S A LESSON IN THIS WAR . . .

FOR MACHINE TOOL USERS!

The war proves that light, fast PT boats and destroyers are as important a part of a fighting navy as heavy battleships. In war plants, too, industry finds that Walker-Turner fast, compact, well-built machine tools are as essential to today's enormous production program as the heavier units. Management, alert to improved methods, shows growing preference for Walker-Turner Machine Tools because: (1) They are quickly available, (2) Their weight conservation is effected by careful design and discriminating selection of material, (3) Prices are low, (4) Unskilled labor finds them easy to operate.

Our new catalog will give you a better idea of this vital industrial development.

WALKER-TURNER COMPANY, INC.
Berckman Street, Plainfield, N. J.


A Radial Drill for light drilling, tapping, routing. Price $352.50. Drills to center of 62" circle. Head tilts to 45° right or left. Spindle speeds 160 to 8200 r.p.m.

walker-turner
COMPANY, INC.
PLAINFIELD, N.J.
U.S.A.

MACHINE TOOLS

DRILL PRESSES — HAND AND POWER FEED • RADIAL DRILLS
METAL-CUTTING BAND SAWS • POLISHING LATHES • FLEXIBLE SHAFT MACHINES
RADIAL CUT-OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS

When writing Walker-Turner Company, Inc. please mention Purchasing

HIGH PRESSURE CONTAINERS

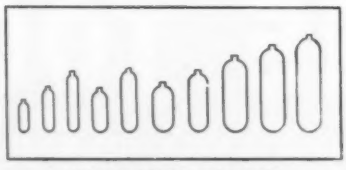
War needs have greatly broadened the field of usefulness of high-pressure gases and liquids. And Walter Kidde & Company has kept pace with that development by providing containers in an ever-widening variety.

Kidde cylinders are available in many sizes and shapes for the storage of carbon dioxide and other gases. Special-purpose valves and release mechanisms have been devised by Kidde engineers.

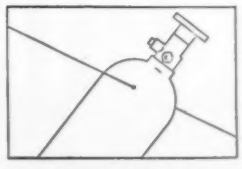
If you need help in solving a high pressure container problem, why not get the benefit of Kidde's experience? Our engineers will be glad to advise you. Just drop us a line—there is no obligation.

Walter Kidde & Company, Inc.
546 Main Street Belleville, N. J.

LIGHTER WEIGHTS



WIDE RANGE OF SIZES



SHATTER-PROOF

PROTECTS LIVES

Kidde
HIGH PRESSURE GASES • FIRE PROTECTION

When writing Walter Kidde & Company, Inc. please mention Purchasing

IF IT'S PIPING CONTACT FLORI

The construction of a power dam requires huge quantities of fabricated pipe and plate steel products . . . All this is within our scope

Fabricated Piping—for steam, water, air, oil, gas, chemicals • Random mill or cut lengths, bent, coiled, threaded, welded, flanged • Valves, Pipe Fittings

In brief: anything in tubular or plate steel fabrication. Send your inquiries.

FLORI PIPING

THE FLORI PIPE COMPANY • ST. LOUIS—CHICAGO

When writing The Flori Pipe Company please mention Purchasing

Bolts are important . . . .

—AND YOU CAN'T OPERATE A

These four books will help you in specifying and buying "standard" bolts, nuts and "specials"

THE LAMSON BLUE BOOK—is our complete Catalog of standard products excepting our Aircraft products.

"BOLTS, NUTS & SCREWS"—70 pages of technical and practical information. First copy gratis, requested on your letterhead. Additional copies one dollar each.

"BOLT, NUT AND RIVET STANDARDS"—175-page book published by the American Bolt, Nut & Rivet Manufacturers Association, 1550 Hanna Bldg., Cleveland, Ohio. Price one dollar per copy. (*Order from publishers, please.*)

"SIMPLIFIED STOCK LIST"—Of bolts, nuts and screws, conforming to latest revisions of the Office of Price Administration, and of great value in showing you in what ratio quantities of various standard products are kept in stock for deliveries, by your jobbers and in our own (and other bolt manufacturers') warehouse stocks.

you can't fight without them

A TANK, SHIP OR PLANE WITHOUT THEM

For this reason it is imperative that you know as much as you possibly can about bolts.

You should know how they are made and why some bolts are made much differently than others.

You should know what materials are available today for the bolt manufacturer, which are the critical materials and which one of the NE steels may be substituted to obtain as good a bolt.

You should know the difference between actual bolt strength tables and theoretical bolt strength tables as shown in steel hand-books, for bolt manufacturers' actual experience and engineering research has developed more reliable tables for strength of threaded products.

You should know—and this is extremely important to designers—that you can obtain a standard size and type of bolt from stock that, properly heat treated, will produce higher physicals than a bolt of approximately *twice its weight or size,* thereby saving steel in their making, and requiring a smaller hole in the materials to be bolted.

You should know that a bolt made "special" to your designs requires "special" handling from start to finish in every department of our plants, and reaches you much later *than had you designed to use a standard bolt.*

You should know that all too frequently a "special" bolt required by your designers in good faith may be found by our engineers, working in collaboration with your own, *to be entirely unnecessary.*

All these are somewhat commonplace conditions to our engineers whose sole business is making bolt and nut products.

The first thing to do is to ask our engineers for help—after you have familiarized yourself with the most common bolt manufacturing methods. And this we have made easy for you to do in this way—we have made available our standard Catalog, the Lamson Blue Book, which lists all sizes of standard products excepting aircraft products; and we have made available a book, already well known, with the title, "Bolts, Nuts & Screws," containing valuable reprinted technical articles, well illustrated, some of them written by our own engineers and some by engineers from other manufacturers, all of them authentic. (This book later on will be revised with additional articles, published since its first edition, but the new articles will be available as separate reprints before the book is revised.)

And then there is now available a booklet of vast importance to use in connection with any manufacturer's catalog, the new "Simplified Stock Sizes of Bolts, Nuts, Screws and Rivets," as scheduled in maximum price regulation No. 147 by the Office of Price Administration. This stock list will even be of help to your designers, for it shows relative quantities of standard sizes of bolts kept available *and if they design for standard bolts,* this tells you whether they can obtain them readily from stock.

Finally, there is the "Bolt, Nut and Rivet Standards" book, published by the American Institute of Bolt, Nut & Rivet Manufacturers, invaluable itself, which sells for one dollar.

Here is condensed knowledge, bolt manufacturing and application experience, available to you for the asking. If you are making war materials, directly or indirectly, you know the problems that come up every day due to employment of inexperienced help, skilled or unskilled. A good engineer may lack a knowledge of bolts—have his own work hampered—because of it. Here then is an opportunity to get a lot of practical experience and up-to-date guidance, "in a package." You can depend upon the contributions of our own engineering and production men, when you call them in, because Lamson & Sessions' five plants are operated by men whose organization has over 75 years experience in the bolt business.

Buy U. S. War Bonds and Stamps
—an investment in America

THE LAMSON & SESSIONS COMPANY, 1971 W. 85th St., Cleveland, O.

HERE'S A COUPON FOR YOUR CONVENIENCE

The Lamson & Sessions Company
1971 West 85th Street
Cleveland, Ohio

(Please be sure you read directions on opposite page for getting a copy of "Bolt, Nut & Rivet Standards.")

Please send us ☐ Lamson Blue Book; ☐ Bolts, Nuts & Screws; ☐ Simplified Stock Sizes, to the undersigned.

Name of Individual _____ Title or Kind of Work _____

Employed by (Name of Company) _____

Street Address _____

City and State _____

LAMSON & SESSIONS

BOLTS · · NUTS · · COTTERS · · CAP SCREWS · · SPECIALS

Your Jobber Stocks the Lamson Line

the *unusual* in Springs is *not unusual* at Muehlhausen

★ Muehlhausen has provided the answers to many challenging spring problems—provided them at a speed in keeping with war-time demands. Unusual spring requirements have been successfully met with unusual spring designs—made possible by this company's widely varied experience, plus engineering skill and extensive production facilities.

Springs of every shape and size, in quantities large and small, are part of everyday production. Muehlhausen craftsmen are able to produce the correct spring for every requirement—whether a tiny compression spring that will be flexed a hundred times a minute; or a large, hot-formed spring that must withstand extreme operating temperatures.

This ability of Muehlhausen to design and fabricate unusual springs has permitted greater latitude in designing war products now, and will enable engineers to plan, with greater freedom, the products of tomorrow.

MUEHLHAUSEN SPRING CORPORATION
Division of Standard Steel Spring Company
675 Michigan Avenue, Logansport, Indiana

SEND FOR TWO NEW FOLDERS—FREE

New Die Spring Bulletin illustrates, describes 206 sizes and types of die springs.

New Armament Bulletin shows importance of springs for many types of war equipment.

MUEHLHAUSEN
MS
SPRINGS
EVERY TYPE AND SIZE

When writing Muehlhausen Spring Corporation please mention Purchasing

BURIED TREASURE IN YOUR PLANT

Metal Cutting Tools for which you have no immediate use are as valuable as buried treasure. The tungsten, chromium, molybdenum, and other alloys they contain are more precious than pieces of eight. If returned promptly to scrap or to the mill, they will insure a continued and plentiful supply of the high speed tools you need to build the fighting tools American soldiers need!

NATIONAL

NATIONAL TWIST DRILL & TOOL DETROIT U.S.A.

TWIST DRILLS
REAMERS, HOBS
MILLING CUTTERS
COUNTERBORES
SPECIAL TOOLS

TWIST DRILL AND TOOL COMPANY

HOME OFFICE AND FACTORY—DETROIT, MICH.

Tap and Die Division—Winter Brothers Co., Wrentham, Mass.

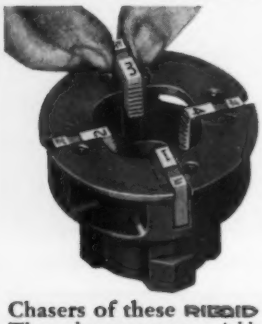
Factory Branches • New York • Chicago • Cleveland • San Francisco • Distributors in Principal Cities

When writing National Twist Drill and Tool Company please mention Purchasing

Speedier

Pipe Threading with this smooth little RIDGID No. 11R

IT'S always hurry these days. Well, if your rush is to thread 1/8 to 1 1/4 inch pipe, grab up this little RIDGID No. 11R, snap the size head you want into the drive ring from either side (it can't fall out) and start threading in swift easy ratcheted strokes. If it's a short pipe and close to the wall, simply reverse the chasers — no special dies needed. A rugged steel-and-malleable tool that takes stiff punishment. Patented wire carrier free with sets. Ask your Supply House for this smooth little RIDGID No. 11R.



Chasers of these RIDGID Threaders reverse *quickly* for close-to-wall threads.

RIDGID
Scraps Your Wrench Housing Repair Problem
UNCONDITIONAL GUARANTEE
If this Housing ever Breaks or Distorts we will replace it Free
COPR. 1937
THE RIDGE TOOL CO.
ELYRIA, O.

This Guarantee means RIDGID Wrenches Stay on the Job . . .

UNDER war emergency or post-war competition you can't afford to waste either time or money repairing pipe wrenches. That makes RIDGID important to you. The guaranteed housing practically insures you against wrenches out of order, off the job — cuts expense and spares needed. And it's faster easier to use. Handy pipe scale on hookjaw, adjusting nut in open housing always spins easily to pipe size, powerful I-beam handle is comfortable to the hand. For a trouble-proof work-saver tool . . . always ask your Supply House for RIDGID.

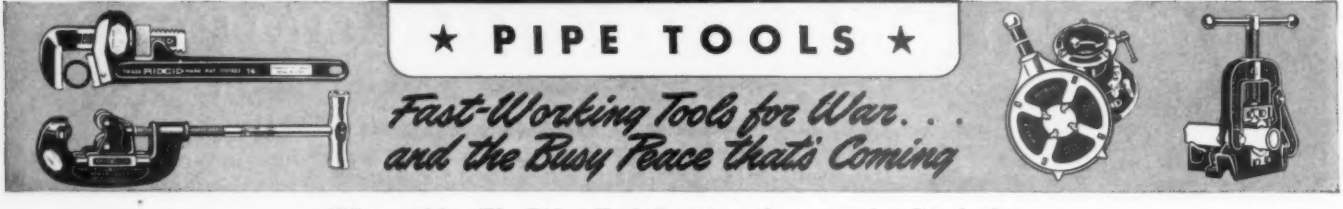
RIDGID End Wrench for pipe in coils or against flat surfaces. Made in sizes E6" to E36".

Buy RIDGID Pipe Tools at Supply Houses Everywhere

RIDGID

★ PIPE TOOLS ★

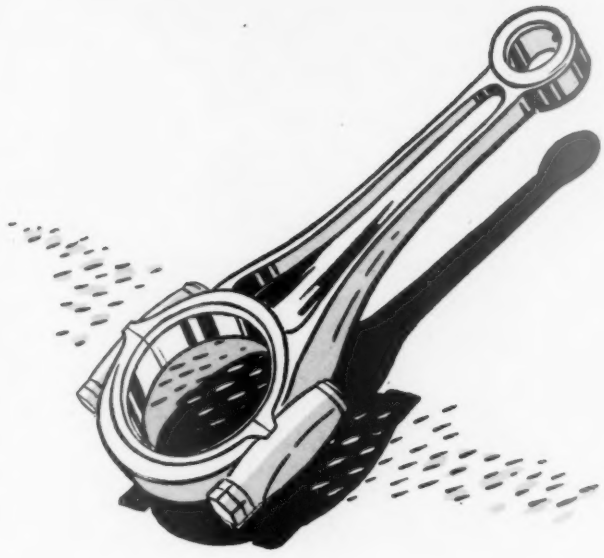
THE RIDGE TOOL COMPANY
ELYRIA, OHIO, U.S.A.



Fast-Working Tools for War . . . and the Busy Peace that's Coming

When writing The Ridge Tool Company please mention Purchasing

You can get a new hat in 5 minutes



...but it may take weeks to replace a burned-out bearing...

The answer is Preventive Maintenance now with Shell Automotive Lubricants

SHELL

The vital war metals used in bearings are becoming increasingly hard to get. Deliveries on present stocks are questionable. Yet, there are operators who are trying to "stretch" their oil an extra 500 or 1,000 miles in order to "save time and oil."

Driving even the best-made oil beyond its limit of usefulness can cause low oil pressures, sludge, plugged oil lines and screens . . . ruined bearings.

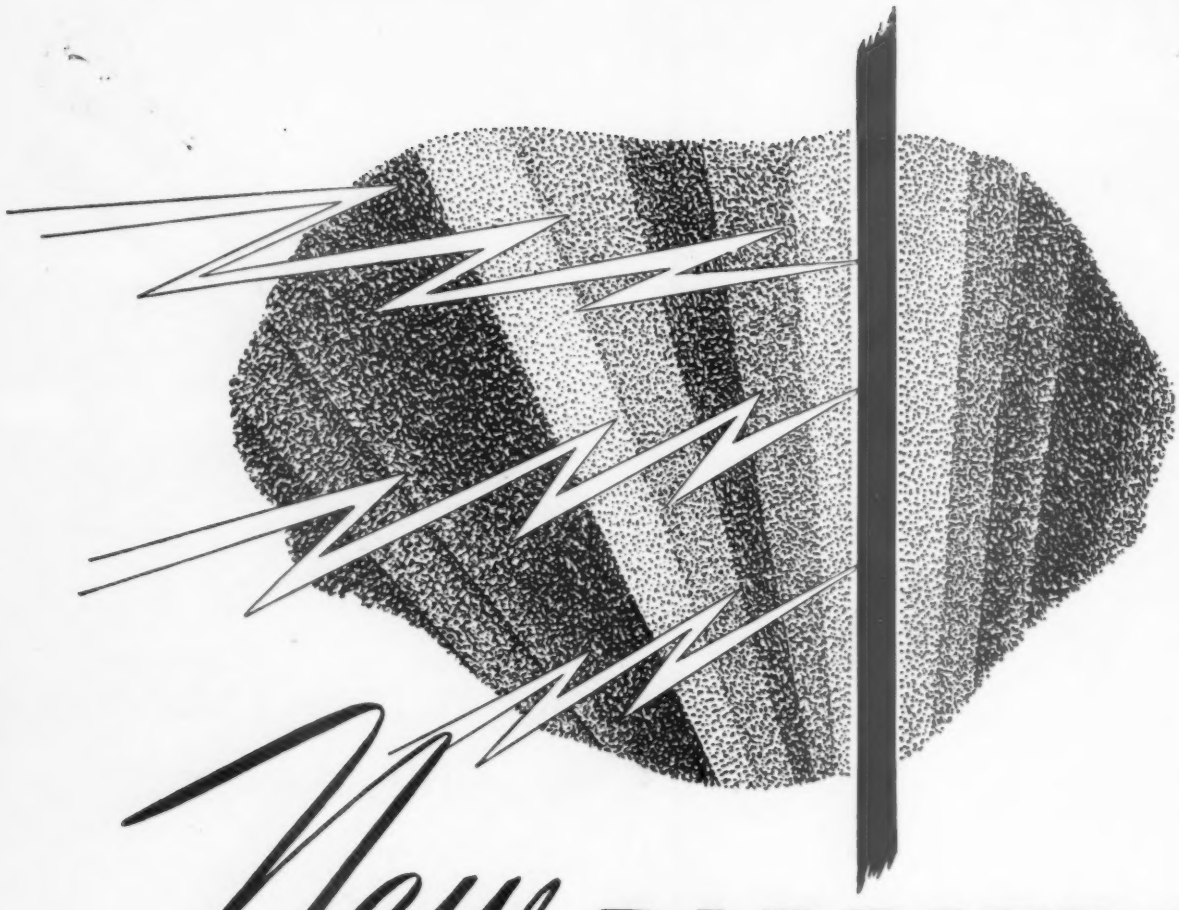
Under today's peak-load conditions oil should be carefully watched, and in many cases *changed more often than usual,* depending on the type of service to which it is subjected.

Yes, changing the oil requires time. But the few minutes it does take may save days of delay later. Don't wait for a bearing failure. Call in the Shell man now. Let him help you plan your Preventive Maintenance.

ARMY E NAVY

First oil refinery to win Army-Navy "E"— Shell's Wood River Refinery.

SHELL AUTOMOTIVE LUBRICANTS



New BARRIERS to Confine Electric Current!

War is destructive but not all effort that goes into the big fight is wasted. Some of it is going to pay mighty big future dividends. That is especially true of the war work that is going on in the country's laboratories.

At Formica this work has resulted in the development of some new insulating materials with new and valuable characteristics which will be doing important jobs in American electrical products long after the war is over.

Three new grades MF, FF-10 and FF-41 accomplish things that could not be done previously with this laminated insulation. MF is a glass mat base for applications requiring low loss at radio frequencies (Power Factor .011; Dielectric Constant 4.6; Loss Factor 0.05 at 1 Megacycle).

F-10 is Fiberglas fabric base material combining good dielectric strength and heat resistance. And FF-41 is designed to resist arcing.

These materials have a new and important usefulness. At present they are available only for the most essential war uses. But later they will be widely applied.

THE FORMICA INSULATION CO., 4665 SPRING GROVE AVENUE, CINCINNATI, O.

When writing The Formica Insulation Co. please mention Purchasing

MAKE FULL INSPECTION A REGULAR ROUTINE

...Even if your rope is long-enduring

HAZARD LAY-SET *Preformed*

Both steel and production time are critical. Save both by regular inspection of your machines. Look especially to your wire ropes that operate them. Wire rope is expendable. Take care of it in order to receive its full service. And this applies to all ropes including **LAY-SET** Preformed, for while **LAY-SET** outlasts ordinary non-preformed wire rope, it too will respond to proper care by lasting *still* longer. Here are a few suggestions:

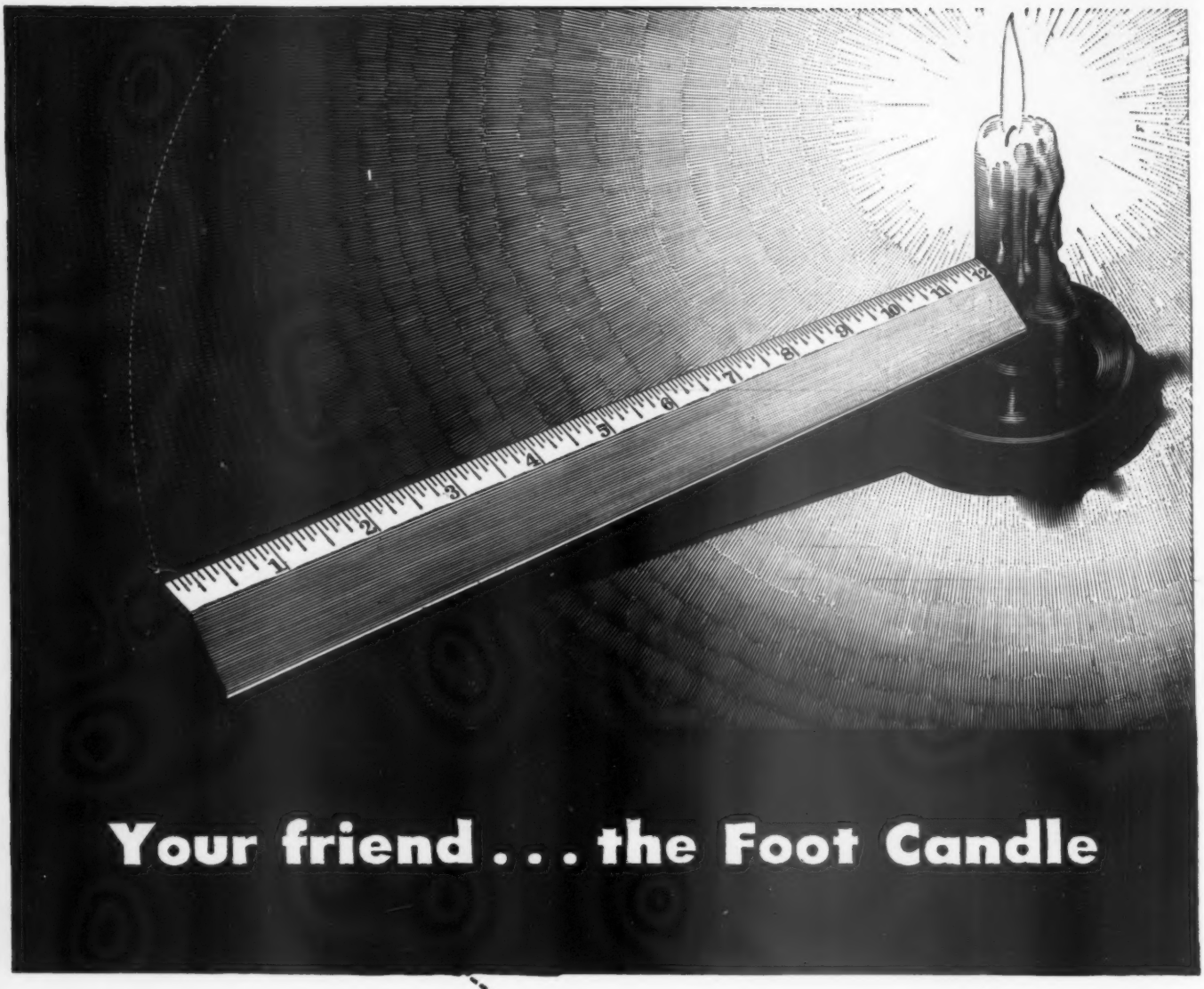
- Clean and lubricate all ropes regularly. Be sure hemp core is not dry or corrosion or collapse may occur. Tighten fittings.
- Be sure you are using the proper rope for the service. Consult your Hazard representative. He will be glad to give you the benefit of Hazard's 97 years of experience.
- If sheaves or drums are critical diameter, specify Hazard **LAY-SET** Preformed because of its high fatigue-resisting quality.
- Be careful of the fleet angle. Don't let the rope deviate more than 1½° from center plane of sheave or excessive wear will result. (Note how this condition is beginning to start in this picture.)
- Don't allow bad spooling for crushing may result. Hazard **LAY-SET** Preformed spools much better than most ropes.

HAZARD WIRE ROPE DIVISION, Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma

AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONNECTICUT

HAZARD LAY-SET *Preformed* **WIRE ROPE**

When writing Hazard Wire Rope Division please mention Purchasing



Your friend . . . the Foot Candle

A FOOT CANDLE is the illumination from one standard candle on a surface one foot from the light source.

It is the unit of measurement of illumination. But more than this, the foot candle is man's staunch friend.

In adequate amounts it means his family will have sufficient light in the home . . . he and his fellow workers sufficient light for better, safer factory production or efficient office detail.

For almost 100 years the MILLER organization has known the foot candle on working terms. This lighting experience bridges the broad ground from the whale oil lamp to the modern continuous fluorescent lighting system now helping industry speed out planes and tanks and cannon.

It has involved engineering and design and skill with copper . . . glass . . . steel . . . aluminum and many new non-metallic materials. It has required ingenuity and resourcefulness and pioneering.

It qualifies us to work with those who need better lighting in war industry. It enables us to cooperate intelligently with those who promote better lighting and sell and service it, too. It means that the MILLER engineer (located in principal cities) can serve you in one of several ways, for better lighting today and tomorrow.

THE MILLER COMPANY · MERIDEN, CONNECTICUT

ILLUMINATING DIVISION
Fluorescent, Incandescent
Mercury Lighting Equipment

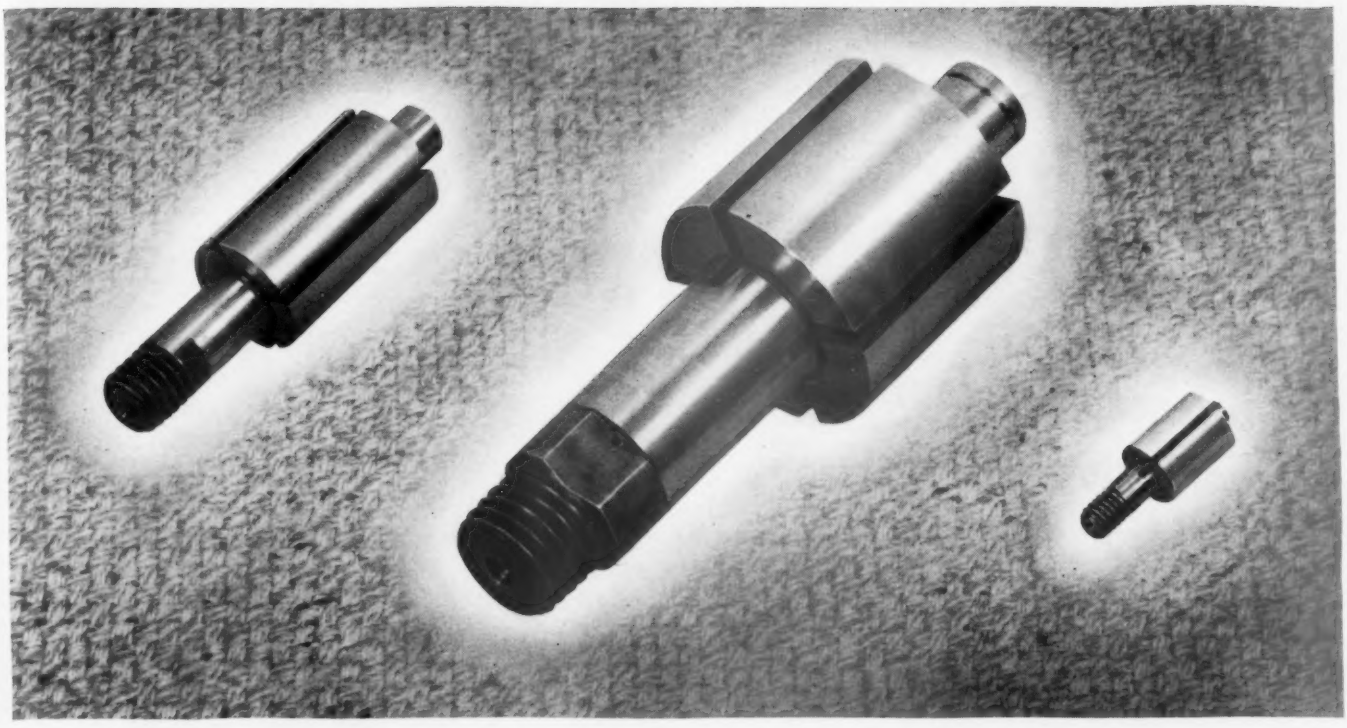
OIL GOODS DIVISION
Domestic Oil Burners
and Liquid Fuel Devices

ROLLING MILL DIVISION
Phosphor Bronze and Brass
in Sheets, Strips and Rolls

WAR CONTRACTS DIVISION
War Material

MILLER
SINCE 1844

When writing The Miller Company please mention Purchasing



3 CASEHARDENED EXAMPLES OF STEEL "Know How"

These are casehardened steel rotors, used in air-driven motors for tube cleaning equipment. They have a past you may find interesting.

Back in the days of plenty, these rotors were machined from SAE 2315 nickel steel. Properly heat treated, 2315 provided the necessary fatigue and wear resistance. However, when nickel joined the critical list—and SAE 2315 went into hiding—maintaining this wear resistance became a problem.

Acting on the recommendation of Frasse service engineers, the manufacturer recently substituted a National Emergency analysis—NE 8620. With slight changes in machining practice, and proper carburization, this substitute analysis has more than answered the purpose.

How are you progressing in the transition from peacetime to war steels?

Frasse technical representatives have been gathering operating data on the new NE steels for months. If you are still in the contemplating stage or have struck a "bug" in changing over, Frasse engineers will be glad to pitch in. Their advice is gratis. Just write or call: *Peter A. Frasse and Co., Inc., Grand Street at Sixth Avenue, New York, N.Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia, Pa. (Radcliff 7100-Park 5541) • 50 Exchange Street, Buffalo, N.Y. (Washington 2000) • Jersey City, New Jersey Hartford, Connecticut • Rochester, N.Y. • Syracuse, N.Y.*

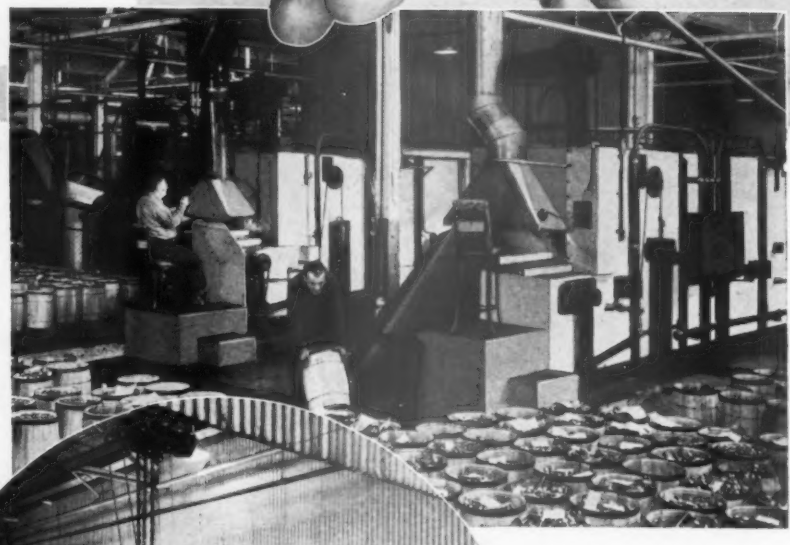
Frasse

Mechanical and Aircraft STEELS

SEAMLESS MECHANICAL AND AIRCRAFT TUBING • COLD ROLLED STRIP AND SHEETS • WELDED STEEL TUBING STAINLESS STEELS AND TUBING • DRILL ROD • COLD FINISHED BARS • ALLOY STEELS • AIRCRAFT STEELS

Meeting your most particular demands for heat-treating cold headed products

CLEVELAND
uses modern electric furnaces for controlled hardening . . . to assure uniform strength



● The strong trend to heat treated cap screws and other cold headed products in recent years has called for ever-increasing capacity in this department of our plant. The electric furnace equipment is the most modern obtainable—running continuously, and accurately controlled to give uniform hardness and toughness. Stronger fastenings and parts thus become available for tanks, planes, and other war equipment where the extra margin of safety provided in heat treated high carbon and alloy steels is of vital importance.

THE CLEVELAND CAP SCREW COMPANY
2917 E. 79th St., Cleveland, Ohio

◀ Electric hardening furnaces that maintain uniform quenching temperatures. Controlled atmosphere provents scale and decarburization.

●

◀ Electric Homo-tempering furnaces where accurate temperatures complete the heat treatment cycle by correct drawing.

Cleveland Cap Screws

Set Screws and Special Upset Parts

Made by the Originators of the Kaufman Process for Greater Strength and Accuracy
Specialists for 26 years in Headed and Threaded Products

WAREHOUSES
CHICAGO: 726 W. Washington Blvd. . **HAY**market **1392**
PHILADELPHIA: 12th & Olive Sts. . **POP**lar **7530**
NEW YORK: 47 Murray St. . . . . **BARC**lay **7-5088**
LOS ANGELES: 1015 E. 16th St. . . **PROS**pect **8326**

When writing The Cleveland Cap Screw Company please mention Purchasing

BELTING AND HOSE WITH "THE THUMB"

Aristotle said: "The superiority of man over animals lies in the hand; the superiority over men, in the thumb."

For the movement of materials and transmission of power by belts and hose and the control of power by industrial brake lining, Thermoid Products have that extra something that is symbolized by the thumb.

Thermoid builds these products with an approach that is unusual. Thermoid engineers and production technicians have a realistic viewpoint. They visualize these products in use in the field rather than as just so much footage or poundage going through a plant. No wonder Thermoid Industrial Rubber Products have an outstanding performance record—they are born with the extra serviceability symbolized by the thumb.

When the order carries the name "Thermoid", every executive from the top to the bottom knows that the Purchasing Department is giving Production the best that can be had.

P.S. In line with material conservation, Thermoid has prepared a series of bulletins on how to extend the life of rubber products now in use. You might find them helpful as reminders to your operating people. Feel free to ask for copies.

THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products.

Thermoid Rubber

DIVISION OF THERMOID CO.
TRENTON, NEW JERSEY

IT'S GOOD BUSINESS TO DO BUSINESS WITH THERMOID

When writing Thermoid Rubber please mention Purchasing

Cool light means efficient light

● There is a reason why cool fluorescent light is the most efficient practical light known. It's simply because a fluorescent lamp transforms electrical energy into more light and with less heat than other light sources.

For fluorescent light production involves an electro-chemical process rather than a heat process. That is, ultraviolet radiation of a precise wave length causes the fluorescent powder coating inside the tube to emit light, rather than heat energy in the form of invisible infrared radiation.

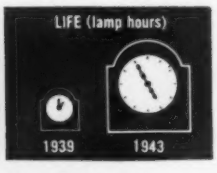
And there is a reason why Sylvania Fluorescent Lamps are as coolly efficient as modern research can make them. Sylvania engineers have drawn on years of specialized and basic experience with incandescent lamps, radio tubes, ultraviolet lamps and other electronic devices. Their aggressive and independent research has helped to make fluorescent a "must" for precision war production, and the best lighting for your home when Victory is won.

Sylvania's tireless research makes continued and consistent improvement possible. For more output, longer life and uniform color – specify Sylvania Fluorescent Lamps in authorized new installations and replacements.

FAR MORE LIGHT AND LIFE FOR YOUR MONEY

Compared with 1939 a dollar invested today in Sylvania Fluorescent Lamps buys more than four times the lumen output and approximately five times the lamp life.

SYLVANIA FLUORESCENT DOLLAR BUYS:



(Based on decreasing price and increasing efficiency and durability of Sylvania 40-Watt White Fluorescent Lamp)

Even on existing circuits, a change-over to fluorescent—Sylvania Lamps, Fixtures and Accessories—will probably more than double the light you get for the same wattage.

SYLVANIA

ELECTRIC PRODUCTS INC.

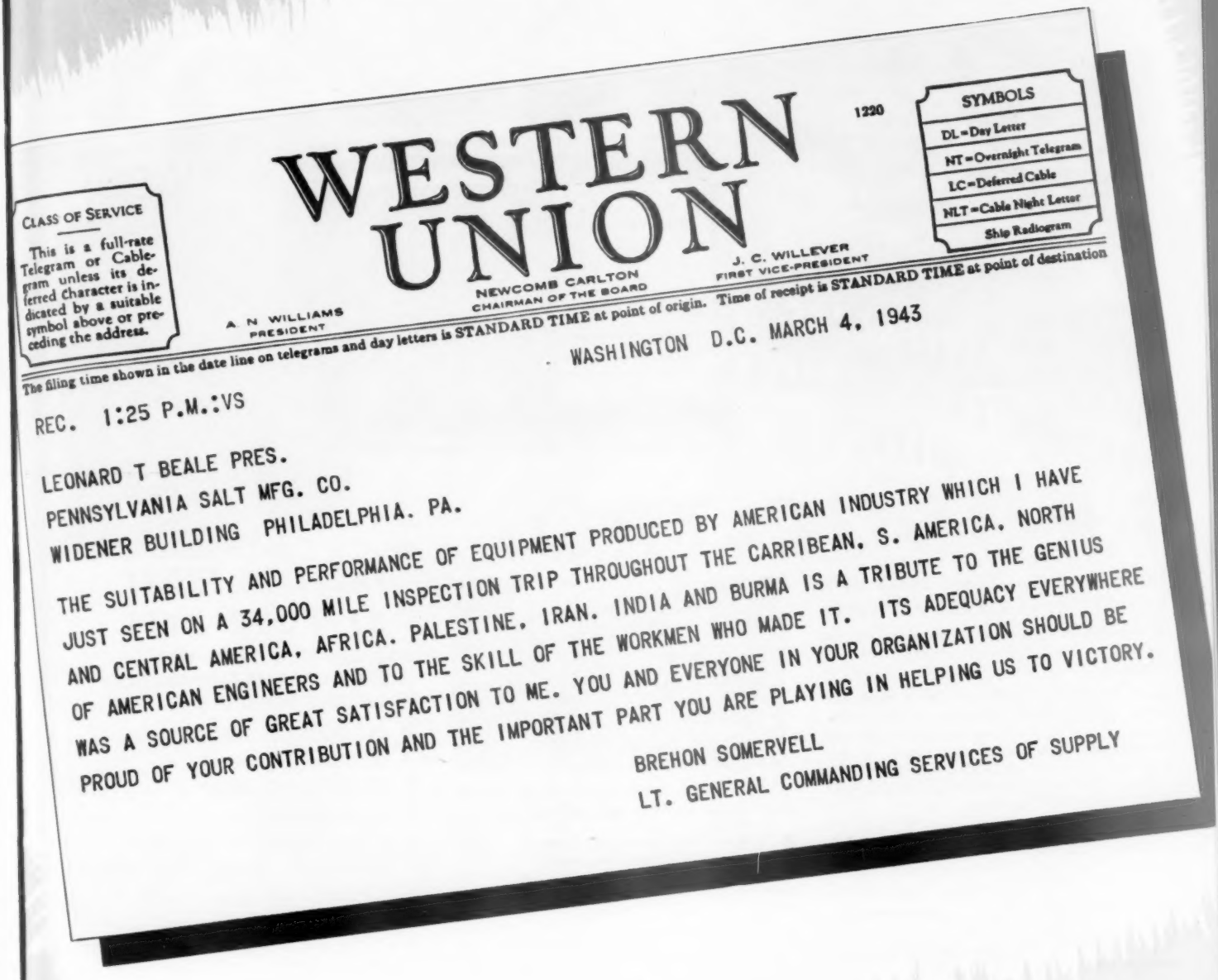
Formerly Hygrade Sylvania Corporation

Salem, Mass.

INCANDESCENT LAMPS, FLUORESCENT LAMPS, FIXTURES AND ACCESSORIES, RADIO TUBES, ELECTRONIC DEVICES.

When writing Sylvania Electric Products, Inc. please mention Purchasing

THANK YOU, GENERAL SOMERVELL



WESTERN UNION

1220

SYMBOLS
DL = Day Letter
NT = Overnight Telegram
LC = Deferred Cable
NLT = Cable Night Letter
Ship Radiogram

CLASS OF SERVICE
This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

J. C. WILLEVER
FIRST VICE-PRESIDENT

A. N. WILLIAMS
PRESIDENT

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

WASHINGTON D.C. MARCH 4, 1943

REC. 1:25 P.M.:VS

LEONARD T BEALE PRES.
PENNSYLVANIA SALT MFG. CO.
WIDENER BUILDING PHILADELPHIA. PA.

THE SUITABILITY AND PERFORMANCE OF EQUIPMENT PRODUCED BY AMERICAN INDUSTRY WHICH I HAVE JUST SEEN ON A 34,000 MILE INSPECTION TRIP THROUGHOUT THE CARRIBEAN. S. AMERICA. NORTH AND CENTRAL AMERICA. AFRICA. PALESTINE. IRAN. INDIA AND BURMA IS A TRIBUTE TO THE GENIUS OF AMERICAN ENGINEERS AND TO THE SKILL OF THE WORKMEN WHO MADE IT. ITS ADEQUACY EVERYWHERE WAS A SOURCE OF GREAT SATISFACTION TO ME. YOU AND EVERYONE IN YOUR ORGANIZATION SHOULD BE PROUD OF YOUR CONTRIBUTION AND THE IMPORTANT PART YOU ARE PLAYING IN HELPING US TO VICTORY.

BREHON SOMERVELL
LT. GENERAL COMMANDING SERVICES OF SUPPLY

PENN SALT *Chemicals*

PENNSYLVANIA SALT MANUFACTURING COMPANY, 1000 WIDENER BUILDING, PHILADELPHIA
BRANCH OFFICES: NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • WYANDOTTE • TACOMA
PLANTS: PHILADELPHIA • EASTON • NATRONA • WYANDOTTE • TACOMA • PORTLAND, ORE.

200 PICTURES AT A GLANCE

BLAST BOTTLENECKS BEFORE THEY ARRIVE WITH

PRODUC-TROL . .

THE PRODUCTION CONTROL BOARD WITH *VISIBLE* CARD RECORD ATTACHED!

● PRODUC-TROL is a board on which can be listed any number of items from one to fifty thousand.

● EACH ITEM IS LISTED on a card fitted into a flat pocket at the left of the board. To the right are two rows of peg holes. The top line for registering a schedule or goal to be achieved. The second, SPRING TAPE LINE shows the actual achievement against a schedule or goal.

● PRODUC-TROL eliminates paperwork . . . spotlights all items needing attention . . . one bolt or small part may hold up an assembly line . . . PRODUC-TROL spots it immediately.

● PRODUC-TROL is simple . . . can be handled by any clerk. The cost is low . . . no maintenance. PRODUC-TROL pays for itself a dozen times a day.

● USERS SAY, "One peg on PRODUC-TROL is worth a ream of writing."

50,000 Items Controlled As Easily As 50 With A Battery Of PRODUC-TROL Boards

● PRODUC-TROL speeds production . . . eliminates "too little" and "too much."

● WHAT PRODUC-TROL is doing for others it can do for you.

● "SPOTLIGHT", illustrating the complete PRODUC-TROL line, is yours for a line on your business letterhead.

Our production is 100% war orders. All orders for PRODUC-TROL must bear priority numbers.

FACTS IN FRONT OF YOUR EYES

PRODUC-TROL TELLS YOU INSTANTLY WHAT OPERATION IS BEHIND SCHEDULE in

- *PRODUCTION SCHEDULING*
- *MACHINE LOADING*
- *MATERIAL CONTROL*
- *CONTRACTING*
- *SUB-CONTRACT CONTROL*
- *INDIVIDUAL ORDER SCHEDULING*
- *CONTROL OF PARTS INTO ASSEMBLIES*
- *PARTS PRODUCTION IN LOTS BY OPERATION*
- *PURCHASING*
- *EXPEDITING*

Armor Plate from 32 Factories to Prime Contractors Building Armored Vehicles is Scheduled on PRODUC-TROL Boards in the Plant of the Standard Steel Spring Co., Detroit

A FEW OF THE HUNDREDS OF OTHER PROMINENT USERS OF *PRODUC-TROL*

ARMS & AMMUNITION: Marlin • Auto Ordnance • Dupont • Remington • Lamson • Colt. ***AIRCRAFT:*** Ranger • Republic • Vega • Vultee • Consolidated • White • Jacobs • Bendix • Kellett • Aircraft Components • Link • Aircraft Specialties • Solar • Pioneer • Eclipse. ***TANKS:*** American Car • Baldwin • Cadillac • Massey-Harris. ***ELECTRIC & RADIO:*** G.E. • Westinghouse • Electric Service • ITE • Strong • Robbins & Meyers • Electric Autolite • G.E. X-Ray • Shure Bros. • Connecticut Telephone • Webster • Small • Thos. A. Edison • Leich • Thordarson • Parker • Nat'l. Elec. Products • Scott Emerson • Kellogg • Royal. ***STEEL:*** Carnegie • National Tube • Jones & Laughlin • Standard • Bethlehem • Edgewater • Pittsburgh-Des Moines • Pennsylvania • Copperweld • Morrison • Jessop • Crescent • Jenkins Valve. ***MACHINES:*** Sharples • Rogers Diesel • American Floor • Ferracute • Manufacturers Machine & Tool • Universal Boring • Lincoln • Narragansett • Parker & Harper • Central • L. C. Smith & Corona • Chisholm-Ryder • National Tool • Henry Disston. ***SHIPS:*** Federal • Dravo • Cramp • Wheeler • Bethlehem.

If "information" cannot give you the telephone number of PRODUC-TROL in your city, phone, wire or write—

WASSELL ORGANIZATION
WESTPORT, CONN.

PHONE: WESTPORT 2-4743

PURCHASING PREVIEWS

From the Washington office of

PURCHASING

National Press Building
Washington, D. C.

May 1, 1943

For Purchasing Executives:

Senate Truman Investigating Committee's Criticism of the contract renegotiation processes was followed by quick action on the part of the Army, Navy, Maritime Commission, and the Treasury Department. Heaviest fire of the committee was directed at the lack of uniformity in policy of the various Price Adjustment Boards.

The services met this criticism with a joint statement of policies, which will now guide the actions of all the price adjustment boards. The broad principles which were agreed upon are as follows:

(1) That the stimulation of quantity production is of primary importance.

(2) That reasonable profits in every case will be determined with reference to the particular performance factors present without limitation or restriction by any fixed formula with respect to rate of profit or otherwise.

(3) That the profits of the contractor ordinarily will be determined on his war business as a whole for a fiscal period; rather than on specific contracts separately, with the possible exception of certain construction contracts. Fixed price contracts are negotiated separately from fees on cost-plus-fixed-fee contracts.

(4) That as volume increases the margin of profit should decrease. This is particularly true in those cases where the amount of business done is abnormally large in relation to the amount of the contractor's own capital and company-owned plant, and where such production is made possible only by capital and plant furnished by the government.

(5) That in determining what margin of profit is fair, consideration should be given to the corresponding profits in pre-war base years of the particular contractor and for the industry, especially in cases where the war products are substantially like pre-war products. It should not be assumed, however, that under war conditions, a contractor is entitled to as great a margin of profit as that obtained under competitive conditions in normal times.

(6) That the reasonableness of profits shall be determined before provision for Federal income and excess profits taxes.

(7) That a contractor's right to a reasonable profit and his need for working capital should be differentiated. A contractor can be expected to earn excessive profits on war contracts merely because he lacks adequate working capital in relation to a greatly increased volume of business.

* * *

High Economic War Command has been further concentrated in the hands of Economic Stabilization Director James F. Byrnes through President Roosevelt's Executive Order of April 8, 1943.

While previously the War Labor Board had a large degree of freedom over increases of wages where so-called "inequities and inequalities"

were involved, this power has now been given to Director Byrnes. The WLB now can only refer cases for such adjustment in wage levels to Byrnes.

Effect of the President's order is to put a hard freeze on wages at the Little Steel Formula ceiling level. Most organized labor groups have reached the Little Steel Formula level, which means that wages are pretty much frozen.

The question now revolves around whether President Roosevelt can successfully lock horns with Congress. The misguided actions of the Congressional farm bloc have given him the upper hand. This bloc has been described as acting first, and sometimes thinking. For many years, the farmer was strictly a downtrodden individual, and the farm bloc found that any measure which would increase the farmer's take was both in the interest of their constituents and in the national interest. What the farm bloc members did not realize was that the war has changed the picture. Farm prices have increased, and the farmer is no longer depressed. Inflation would upset the farmer's fortunate position, serving him ill, as well as being distinctly against the national interest.

These conditions were not understood by the Congressional farm bloc. Their lack of understanding, as indicated by their opposition to subsidy payments and other measures proposed to relieve pressure on prices, played into President Roosevelt's hands, giving the Administration sufficient backing to order a hard-and-fast freeze.

Three other elements of the anti-inflation program remain yet to be clarified. The tax program is in the process of being thrashed out, with its terms dependent in some measure on the success of the current bond sales drive. In addition to taxes and Government bond sales, subsidy payments are considered inevitable as a means of relieving pressure on prices in some commodity fields.

* * *

Warning To Industry Against Relying exclusively on post-war reserve funds to guarantee position in the post-war market was given in a book by Mark S. Massel, published by the National Planning Association. Massel has been a consultant on costs and prices to several Federal agencies, including the War Production Board. He maintains that book accounts for post-war reserves are misleading, and are inflationary in character.

Way toward a sound post-war position, he holds, is increasing corporate liquidity, reducing liabilities, and maintaining good operating conditions. Massel criticizes the present contracting practices which, in many cases, give the high cost producer a better profit position than the efficient low cost producer. He also criticizes the tax structure as favoring less efficient operators.

* * *

Controlled Materials Plan has developed into a scheduling device for delivery of materials on orders considered sufficiently important to the war and civilian economy to warrant assignment of priorities. The priorities system still stands, but by programming of orders in advance, WPB hopes to avoid jamming of ratings, with subsequent need for inflating ratings.

Most important result of CMP to date is that it has forced the Claimant Agencies to bring in their requirements sufficiently in advance of the delivery date to permit orderly scheduling of flow of raw materials to the end product. There was nothing in PRP that made advance programming mandatory, as PRP was essentially a shelf, or inventory, plan.

In operation, CMP is not widely different from PRP. While several new administrators were brought into the picture——Harold Boeschenstein and Wally Skuce——still remaining in the setup is the former high command of PRP, and even the planners of the Defense Supplies Rating Plan, fore-runner of PRP.

Notes ON FAST, SAFE SHIPMENTS WITH ACME STEELSTRAP

Over rail and water, war shipments are speeded to destination, safely and economically. Recommendations by Acme engineers are helping to make this possible. The following excerpts are from actual reports, and we could quote from hundreds of others.

CALIFORNIA:

". . . made recommendations for change in packing room layout which resulted in doubling the operator's output."

MICHIGAN:

". . . located their difficulty with carload shipping. Made several suggestions. Will stay with them on next big shipment to see them through."

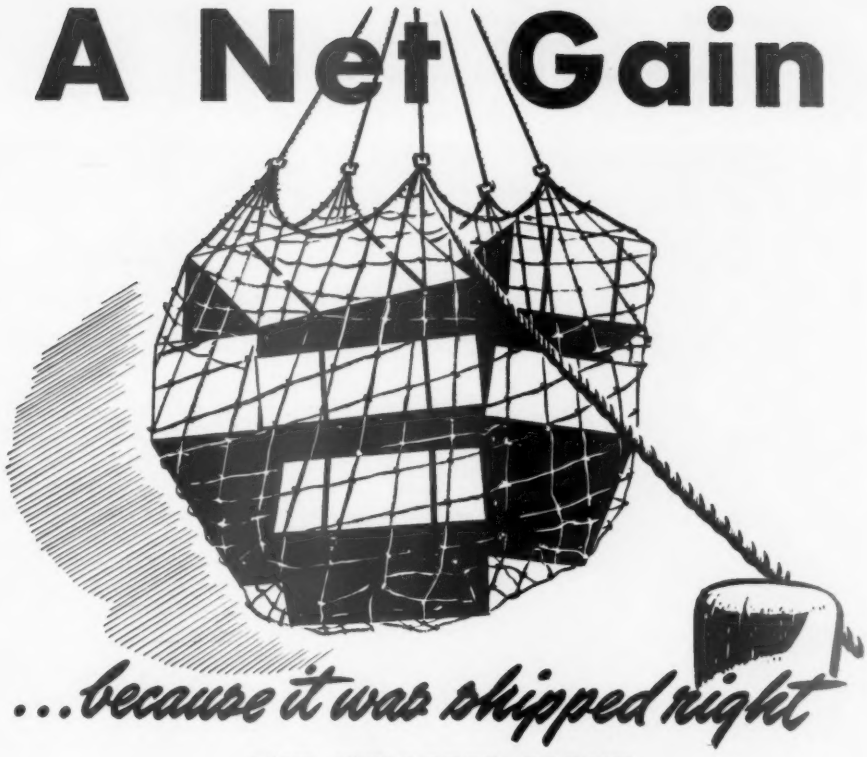
ILLINOIS:

". . . spent day in figuring steel strapping installation for 37 mm. shell tubes. Should give them production line speed in packing room. Also set up second installation for 105 mm. shell tubes."

IT MAY BE A LONG ROUGH JOURNEY
HELP ASSURE SAFE ARRIVAL AT THE FIGHTING FRONTS
★ Use Strapping of correct width and thickness.
★ Put all Strapping on straight.
★ Tighten and seal with supplier's specified tools.
★ Tighten straps—round or flat—until box edges are indented.
★ Boxes may shrink—strap when ready to ship.
STRAP THEM RIGHT—HELP WIN THE FIGHT

Recently, all Acme Steelstrap and Unit-Load users received copies of the new war poster shown above. It acts as a constant reminder for strappers to do their jobs correctly and thus assure safe arrival of vital materiel. Copies will be mailed to any shipper on request.

A Net Gain



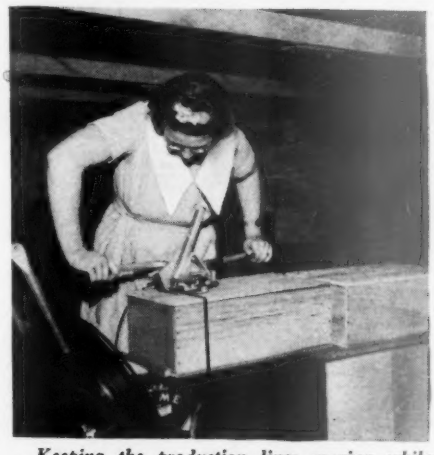
. . . because it was shipped right AND STRAPPED RIGHT

Over the side it comes . . . into the waiting hands of Allied fighting men. This shipment was a net gain for the Allies . . . because proper packing and reinforcement assured its arrival in perfect condition. Bound with Acme Steelstrap, shipments are reaching the United Nations safely all over the world. Providing maximum protection against damage, Acme Steelstrap complies with all Federal Strapping Specifications . . . is made in all types and sizes.

ACME STEELSTRAP Eliminates Damage — Makes Shipments Count

The shipment that reaches destination in perfect condition can help to bring down a Jap Zero—but the effect of a damaged shipment is only a zero. Remember, that a product becomes a war product only when it reaches the hands of those who use it . . . in perfect condition.

And safe delivery is only one advantage of Acme Steelstrap. This modern, reinforcing process saves important time in loading and unloading . . . conserves container material . . and saves loading space. It is used for all types of war products packed in boxes, crates, bundles or on skids . . . and for carload ladings, Acme Unit-Load Bands are employed. Get full information today. Write for free helpful literature.



Keeping the production lines moving while the boys are away—is the aim of many women in industry today. The ease and convenience of Acme Steelstrappers are aiding many women to keep the packing rooms in step with production.

ACME STEEL COMPANY
2842 Archer Ave., Chicago, Illinois

When writing Acme Steel Company please mention Purchasing

Can you find the Three Saboteurs?

YOU'LL have to look sharp to spot the three "saboteurs" in this picture. They're not enemy aliens, though they might just as well be, because they're actually sabotaging night shift production in war plants all over the country.

See the glare (A and B in the diagram below) from those half-shaded bulbs? And see the reflected glare (C) from the machinery? Glare is Saboteur No. 1. It makes men squint and strain, tires them out before the shift is half over.

And look at the man on the right. To avoid the glare he's working in his own shadow (D). Shadows are Saboteur No. 2—as any machine shop worker can tell you.

The third Saboteur (E and F) is Dirt on walls, ceilings and light fixtures. For want of a regular cleaning program, dirt can quickly cut light output in half—even on a new lighting installation.

An Invitation to Production Men

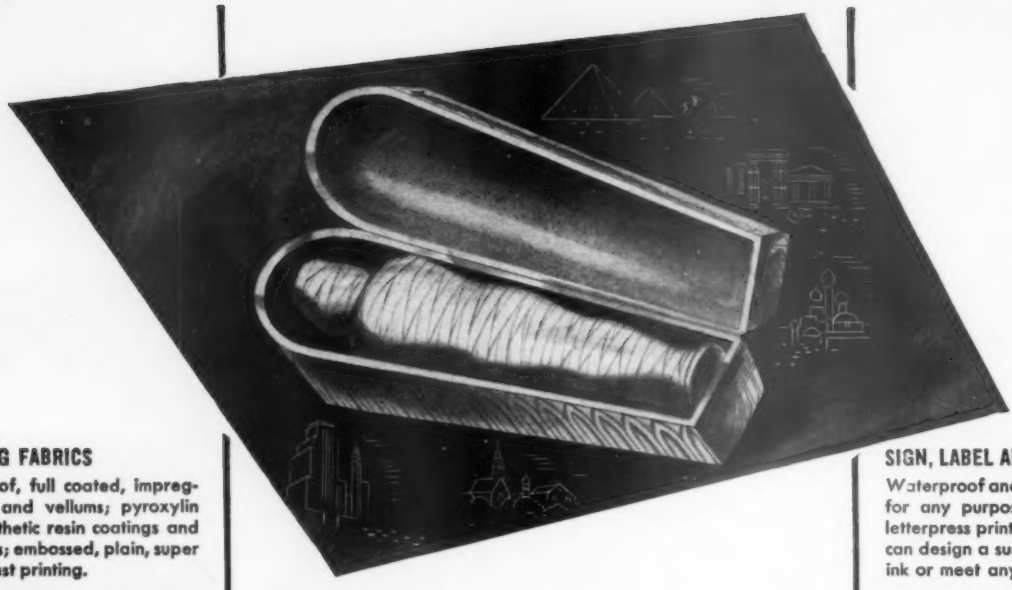
Lighting may be the least of your problems. But it may be the answer to some of your *other* problems. We'd like to take the lighting problem off your shoulders, by sending a G-E Wartime Lighting Counselor to check your lighting and show you how it can be improved with the least possible use of critical materials. Call your nearest G-E lamp office. Or see your G-E lamp supplier or your electric service company. General Electric, Nela Park, Cleveland, Ohio.

G-E MAZDA LAMPS

GENERAL ELECTRIC

When writing General Electric Company please mention Purchasing

AXIS
Situation WELL IN HAND
Our quality sand and permanent mold aluminum castings are helping many producers of finished and semi-finished war materials to keep the "Situation Well In Hand" on the production front. Over thirty years of experience, thorough research, careful supervision and unmatched craftsmanship have made us one of the largest producers of sand and permanent mold aluminum castings. TENUAL Aluminum Castings are meeting today's demands—assuring tomorrow's needs.
TENUAL
ALUMINUM CASTINGS
Photograph shows one of our battery of squeezer machines. Man is using hand tampers. With speed all important these days, squeezer machines are playing a vital part in the mass production of castings.
UY U. S. WAR BONDS & STAMPS
THE NATIONAL BRONZE & ALUMINUM FOUNDRY CO.
CLEVELAND, OHIO
NEW YORK—111 Broadway • CHICAGO—188 W. Randolph • DETROIT—Stephenson Bldg. • LOS ANGELES—405 S. Hill
AKERS OF QUALITY SAND AND PERMANENT MOLD ALUMINUM CASTINGS



CLOTHS—TO KEEP THINGS AS THEY ARE

Impregnated cloth was used for wrapping Egyptian mummies. It preserved in these bodies records of characteristics of races and histories of diseases upon which medical science has based amazing progress. Cloth has clothed, housed and protected man through many ages. Cloth has preserved the works of man. Cloth has been and is man's most valuable servant. Woven Cloth is as modern as electronics. Cloth—filled, coated and treated, will play a large part in the development of the future.

RESEARCH AND DEVELOPMENT — cloth has a permanent structure combining light weight with strength and flexibility. On or within this structure filling, coating and processing fits cloth for many uses. *Consider cloth — consult HOLLISTON.* In general, THE HOLLISTON MILLS can take any type of print cloth, sheeting, drill, twill, duck, in widths from 30" to 80", and can dye; coat with every type of coating, in any color desired; can stiffen fabrics to meet any required pliability, hand, bond, weight of coating, tensile strength, Elmendorf tear strength, for any industrial use.

BOOKBINDING FABRICS

(a) Waterproof, full coated, impregnated, linens and vellums; pyroxylin and other synthetic resin coatings and lacquer finishes; embossed, plain, super finished, contrast printing.

(b) Starch filled, coated, impregnated, mottled, linen and vellum; plain or embossed, special glazed and matte finishes; natural, rough and smooth finishes.

SHADE CLOTH

(a) Pyroxylin or resin impregnated waterproof, meeting Government specifications; all weights, widths and colors; print cloths, sheetings and ducks.

(b) Starch filled, water color, and Holland type shades; machine oil, oil tints, oil filled opaques; fast dyed duck shades; light-proof and translucent.

PHOTO CLOTH

Photo Mounting cloth (self adhesive), single and double adhesive.

REINFORCING FABRICS

All types of waterproof and starch-filled reinforcing fabrics and industrial cambrics, for books, file folders, file pockets, box stays; to be combined, gummed and plain. Various weights from the thinnest print cloth to the heaviest drills and twills.

SIGN, LABEL AND TAG CLOTHS

Waterproof and starch filled. Designed for any purpose, for hand lettering, letterpress printing, offset printing. We can design a surface that will take any ink or meet any inking problem.

RUBBER SEPARATOR CLOTHS

Starch filled glazed sheetings and base treated starched fabrics for waterproof separator cloths.

INSULATING CLOTH BASE

Base treated and stiffened fabrics for insulating cloths; all weights, widths and thicknesses.

TRACING & BLUE PRINT CLOTHS

White and blue ink or pencil cloth; map cloth; blue print cloth, thin and regular, all widths.

LINING FABRICS

Shoe and drapery linings; starch filled, special filled, mercerized and shreiner finishes; straight backfilled finish; high lustre finish, all colors and widths.

COATED AND IMPREGNATED FABRICS

All widths and colors; synthetic resin, nitro cellulose, thermo plastic and thermo setting coatings; mildew proofing; fire, weather and water resistant finishes; gas impermeable finishes, etc., for war and industrial purposes.

MICRO-WEAVE TRACING CLOTH—

An extremely fine and uniform weave of cotton threads finished for great transparency and surfaced for either pen or pencil drawing or for both. Used by draftsmen in industry and architecture. Hundreds of thousands of yards of Micro-Weave Tracing Cloth now in use in shipbuilding and armament industries. Micro-Weave is a modern product serving the fast tempo of modern production. If you use tracing cloth, write for full size test sheets. Micro-Weave meets all standard tests for transparency and erasability.

THE HOLLISTON MILLS, INC.

CONVERTING CLOTHS TO GREATER USE FIELDS

NORWOOD, MASSACHUSETTS

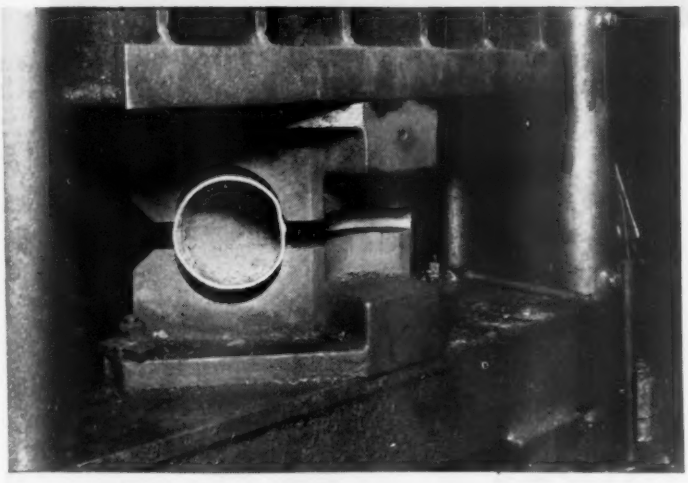
Sales Agents in Principal Cities

When writing The Holliston Mills, Inc. please mention Purchasing

MIDWEST

BUTT-WELDING ELBOWS

Have Greater Dimensional Accuracy and Uniformity



(Above) Oversize Midwest Elbow has been reheated and placed in sizing die for reduction to exact size and shape. Dies have just started to compress 8" elbow having circumference ½" greater than when finished.

Showing the sizing operation completed. The Midwest Welding Elbow now has true circular cross section, uniform wall thickness, and accurate radius, included arc and tangents.

They are SIZED IN COMPRESSION

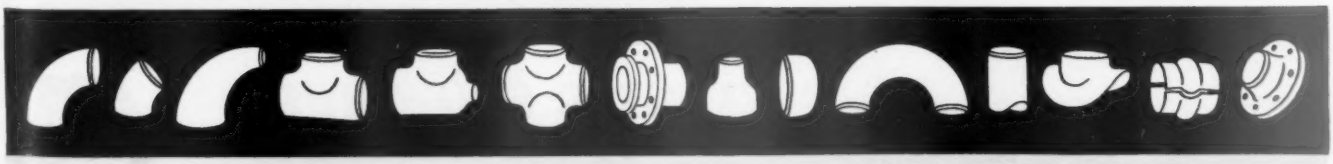
This exclusive Midwest feature is very important to all users of welding elbows because it (1) saves time (and therefore money) in lining up pipe and elbow, (2) saves welding time, and (3) assures more uniform welds.

This feature results from the unique process for manufacturing Midwest Welding Elbows. The Midwest Elbow is first made slightly oversize . . . it is then reheated and reduced to accurate size and shape by a final working of the metal in compression at a forging heat—it is not extruded or stretched.

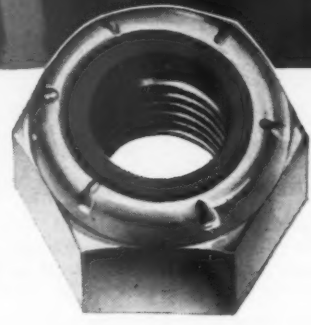
This feature applies to all Midwest Welding Elbows—both American Standard and "Long Tangent." See Bulletin WF-41 for details regarding the many other advantages of Midwest Welding Fittings.

MIDWEST PIPING & SUPPLY CO., INC.

Main Office: 1450 S. Second St., St. Louis, Mo.
Plants: St. Louis, Passaic (N.J.) and Los Angeles
Sales Offices: Chicago—645 Marquette Bldg. • Houston—229 Shell Bldg. • Los Angeles—520 Anderson St. • New York—(Eastern Division) 30 Church St. • San Francisco—535 Call Bldg. • Tulsa—533 Mayo Bldg.



When writing Midwest Piping & Supply Co., Inc. please mention Purchasing



SIX NUTS THAT BRIDLE A THOUSAND HORSEPOWER

THIS is the business end of a powerful Diesel engine.

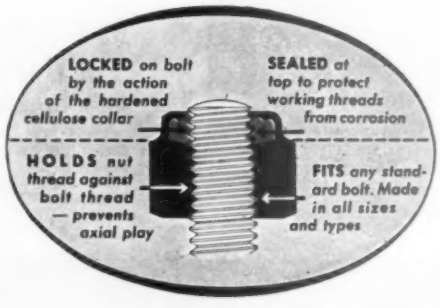
Well over a thousand horsepower spins through that coupling – through those six studs.

To connect that coupling, old-style lock fastenings wouldn't do. They couldn't both lock and be tightened to spread the load evenly. So studs failed.

The solution shows in the photo – Elastic Stop Nuts.

With these fastenings, uniform pressure was obtained as well as complete security against nuts working loose.

In the peacetime production to come, equally puzzling problems will plague manufacturers.


LOCKED on bolt by the action of the hardened cellulose collar
SEALED at top to protect working threads from corrosion
HOLDS nut thread against bolt thread — prevents axial play
FITS any standard bolt. Made in all sizes and types

And we are prepared to help. Our engineers who today are solving war production problems will be ready to share their wide experience with you.

Whenever you have a fastening job let us know. Our men will work with you on it and recommend the correct Elastic Stop Nut to produce a better product or to facilitate its manufacture.

ELASTIC STOP NUTS

Lock fast to make things last

ELASTIC STOP NUT CORPORATION OF AMERICA, UNION, NEW JERSEY

ESNA TRADE MARK

When writing Elastic Stop Nut Corporation of America please mention Purchasing

NO EXPERIENCE NEEDED

Operator-Skill is built into
AMERICAN PHILLIPS SCREWS

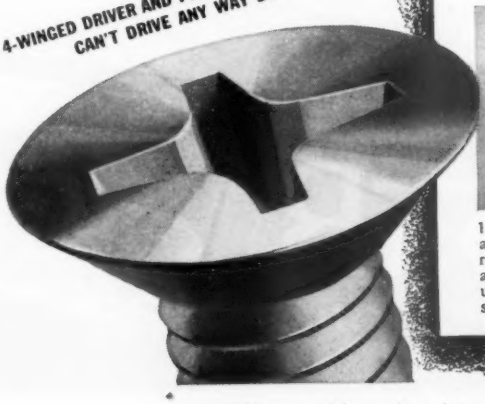
If screw driving is a part of your assembly work . . . and you have to take on inexperienced help . . . then American Phillips Screw Driving *is definitely for you.* Unskilled workers quickly gain confidence from the secure fit of the 4-winged driver in the tapered recess of the screw head . . . making easy, fast, straightline driving practically automatic right from the start. Screw and driver become one solid unit . . . can't wobble . . . can't twist apart. Screw is turned up tight and plumb-level, making a clean, good-looking fastening that any worker would be proud of, and any inspector would pass.

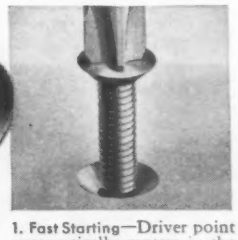
If *your* war production is being held back by slow, tiring, slip-and-slash driving with slotted head screws, then change now to American Phillips and get faster assemblies at a much lower cost.

AMERICAN SCREW COMPANY
PROVIDENCE, RHODE ISLAND

Chicago: 589 E. Illinois Street *Detroit:* 5-267 General Motors Building

4-WINGED DRIVER AND PHILLIPS RECESSED-HEAD SCREW CAN'T DRIVE ANY WAY BUT STRAIGHT





1. Fast Starting—Driver point automatically centers in the recess . . . fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.

2. Faster Driving—Spiral and power driving are made practical. Driver won't slip out of recess to injure workers or spoil material. (Average time saving is 50%.)

3. Better Fastenings—Screws are set up uniformly tight, without burring or breaking heads. A stronger, neater job results and there are no gouges on work-surface.

When writing American Screw Company please mention Purchasing

. . . we found Graybar had 'em on file"

(another example of the time-saving gains of Graybar MM Service)*

A firm that was "up to its neck" in war production was confronted with a new questionnaire from Washington concerning the amounts of strategic materials it required. Many of the essential electrical supplies used by this firm were partly or wholly made of these materials.

The compilation job looked overwhelming to the firm's overworked office staff. Then, someone pointed out that virtually all the electrical items were being purchased "via GRAYBAR." Perhaps GRAYBAR'S records could help.

Sure enough, GRAYBAR'S records of shipment and files of product information were so set up that it was possible to assemble the required data right in GRAYBAR'S local office. So far as electrical supplies were concerned, the job was done quickly and accurately, in strict accordance with governmental regulations.

This is only one example of GRAYBAR'S ability and willingness to work with you to smooth out matters of record-keeping and red tape when you buy electrical supplies. If your procurement procedure is necessarily complicated, we'll fill out every form "to the letter." But if a chance exists to help *cut down* on paper-work we'll try just as hard to help you find i

*** Serving as your MATERIALS MOBILIZER**

By this GRAYBAR service, your electrical needs are linked to the available output of 200 manufacturers, mobilized locally at more than 80 warehouses. The MM Plan "dovetails" GRAYBAR'S procurement work with your own purchasing requirements. You save time in getting estimates, checking specifications, expediting delivery, locating "hard-to-get" items. Ask your local GRAYBAR Representative how this "one-call" service can help you.

Executive Offices:
GRAYBAR BUILDING
New York, N. Y.

GraybaR

IN OVER 80 PRINCIPAL CITIES

Everything Electrical . . . . THAT IT TAKES TO WIN!

When writing Graybar Electric Company please mention Purchasing

PURCHASING

MAY, 1943 . . . . . CONTENTS

Published monthly by

CONOVER-MAST COMPANY
Publication Office: Orange, Conn.

Editorial and Executive Offices:
205 East 42nd Street, New York, N. Y.

HARVEY CONOVER — B. P. MAST
Publishers

STUART F. HEINRITZ.....Editor

GEO. E. HENRY....Associate Editor

A. M. MORSE, Jr.....Manager

J. K. Mulford.....Art Director and Production Manager

L. McMahon...Production Assistant

Washington Editor
A. N. Wecksler
National Press Building

Western Manager
Stanley J. Smith
333 N. Michigan Ave., Chicago

Cleveland Manager
Richard C. Grove, Leader Building

Advertising Representatives:
Joseph Mehr, 205 East 42nd St. New York
Duncan A. Scott & Co.
Mills Bldg., San Francisco
Western Pacific Bldg., Los Angeles

Hold That Line! 67

Program of the 28th Annual Convention, National Association of Purchasing Agents 69

Problems of Post-War Production 74

Post-War Planning—Globaloney or Common Sense? ... 75
By A. N. Wecksler

Production Scheduling Under CMP 79
By Thomas J. McBreen

Help From Testing Laboratories 81
By E. L. Cady

Scheduling is a Long-Range Operation Today 84

Federal Procurement Policies in the Post-War Era 86
By Clifton E. Mack

Material Control Record for Purchasing Rated Materials 91
By W. J. Brookman

Utility Purchasing Agents Confer at Detroit 92

Methods of Analysis to Determine the Right Purchase Price 93
By John H. Harwood

Stockroom Lighting 99
By Dean M. Warren

Basic Principles of Purchasing 101
IV. Quantity Factors in Buying

What'll You Have? 109
By Wayne R. Allen

It's Your Move 173
By D. F. Gardner

Cover design adapted from WPB poster
By Garrett Price

MONTHLY FEATURES

"Know How" Information 10

F.O.B. 20

Purchasing Previews 55

New Products—Ideas 112

Among the Associations 136

Business Machines and Stationery Stores 173

Personalities in the News 200

Index to Advertisers 302

PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

VOLUME XIV, NUMBER 5, 35c per copy, $3.00 per year. Extra postage for Canadian and foreign subscriptions $1.00 a year. Contents are indexed weekly and annually by the Engineering Index Service.

Copyright 1943 by Conover-Mast Company in the U.S.A.

Press of The Wilson H. Lee Co.
Orange, Conn.

KILLED OR INJURED AT WORK LAST YEAR—

1,618,000 MEN!

HELP PREVENT MANY ACCIDENTS BY USING

AMERICAN CABLE TRU·LAY *Preformed* WIRE ROPE

During the first twelve months of this war more than 1½ million men were killed or injured by industrial accidents. That tremendous loss in productive time and needed man-power undoubtedly prevented the quick winning of several battles. Indeed, according to the National Safety Council, the lost-time through accidents could have supplied war equipment for 110,000 soldiers, sailors or marines. *And the shame of it all is that many of these accidents were needless.*

One way many operators have reduced time-out accidents is through adoption of TRU-LAY PREFORMED WIRE ROPE. American Cable TRU-LAY is a *safer* rope to handle because it is preformed. TRU-LAY is flexible, tractable, willing to do what is required of it without crankiness. It resists kinking and snarling and possesses remarkable fatigue resistance. More than this, broken crown wires in TRU-LAY Preformed do not wicker out to jab and tear workmen's hands. TRU-LAY doesn't ravel (and ruin itself) when cut or broken. For your next line, specify American Cable TRU-LAY Preformed. Do everything possible to reduce lost-time accidents.

AMERICAN CABLE DIVISION

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma

AMERICAN CHAIN & CABLE COMPANY, INC.

BRIDGEPORT, CONNECTICUT

ESSENTIAL PRODUCTS . . . TRU-LAY Aircraft, Automotive, and Industrial Controls, TRU-LOC Aircraft Terminals, AMERICAN CABLE Wire Rope, TRU-STOP Brakes, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Castings, CAMPBELL Cutting Machines, FORD Hoists, Trolleys, HAZARD Wire Rope, Yacht Rigging, MANLEY Auto Service Equipment, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Electric Steel Castings, WRIGHT Hoists, Cranes, Presses . . . *In Business for Your Safety*

When writing American Cable Division please mention Purchasing

HOLD THAT LINE!

PRESIDENT Roosevelt's dramatic rallying cry to "Hold the line!" against inflation borrows a slogan that has been heard over many a football field when the going is tough. The significant fact about that slogan is that it is used only when the team is desperately on the defensive. And the parallel is an apt one. For while our forces on the production front and on the Tunisian peninsula are waging a spectacularly successful offensive, we have fallen back steadily before the increasing pressure of rising costs. By the President's own admission, we have relaxed the line, trying to find justifications for not holding it here or there.

Another parallel is that the slogan adds moral rather than physical support to the defense, for the order does little more than underline policies that already nominally exist, and calls for more effective action from agencies that have presumably been operating for precisely that purpose of holding the line. It is a bid for public support in this program.

It is high time to make clear that holding the line against inflation means a squeeze for everyone—farmer and wage earner as well as industrialist—lower living standards as well as narrower profit margins. The renegotiation boards have flatly disallowed any provision for industrial reserves to finance reconversion, while OPA fosters such devices as installment payments for post-war delivery of consumer goods as a means of absorbing some of the growing accumulation of surplus purchasing power which is not immediately expendable because of product shortages.

The policy of balances and concessions to keep pace with rising costs, instead of accepting the inevitable squeeze, is the surest way to accelerate the inflation spiral. To oppose it now is bound to be an unpopular move in a regime based primarily—and constructively, under pre-war conditions—on a social program. But, as the President says, we have already taken too many chances; inflation must be stopped, and now. Social advances would be among the first casualties in an era of unbridled inflation.

The message might have been even more directly addressed to the great group of citizens it must really affect.

Stuart F. Heinritz

FOR QUICK ACTION ON STEEL

"WE'RE having better luck on steel, now," said a manufacturer the other day. "There *were* times when we had to 'phone and 'phone, but now we are going to the warehouse with the most complete stocks, with best facilities for handling and delivery. We are saving the time of shopping around—and saving man-hours in our plant—by calling Ryerson first."

Sound reasoning, isn't it, when you want something, to go where you're most apt to get it. Whether it's fast service, a steady, reliable source, a cutting or fabricating operation that will facilitate your production, or just information and assistance, you're most apt to get what you want by calling Ryerson first!

Ryerson has maintained its leadership in the steel business by making good every promise, by knowing the kind of service customers want and giving it to them, and above all else, by having *in stock* most of the time the kinds, shapes and sizes of steel they want, ready for immediate delivery.

Stocks are reasonably complete, considering the war demand placed upon them. But, whatever kind of steel you want, within the WPB plan; whatever service you would like to have, *call Ryerson first!* You'll get prompt, intelligent cooperation—at Ryerson!

JOSEPH T. RYERSON & SON, *Inc.*, Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City

RYERSON STEEL-SERVICE

When writing Joseph T. Ryerson & Son, Inc. please mention Purchasing

28th Annual Convention of the

NATIONAL ASSOCIATION

OF

PURCHASING AGENTS

Waldorf Astoria Hotel, N. Y.
May 24-25-26, 1943

ROY C. HABERKERN

Purchasing Agent, R. J. Reynolds Tobacco Company
President, National Asscciation of Purchasing Agents

THE 1943 convention of the National Association of Purchasing Agents is a "*MUST*" appointment on the schedule of every purchasing executive. It bears the stamp of approval from official Washington, as evidenced by the presence on the program of leaders from the war agencies, who recognize the importance of this business conference as a vital and constructive contribution to the conduct of our national war effort on the industrial front. If there were any lingering doubt on that score, it is effectively dissipated by Donald Nelson's spontaneous tribute at the 1942 meeting, when he declared, "You are the most important group in the United States today!"

Geared to the tempo of the times, this will be strictly a business meeting, crammed with information and opportunities that no purchasing man can afford to miss. The entertainment program, the Inform-A-Show, the golf tournament and excursions are casualties of wartime. But the meat of the program—the general and group sessions, the enormously practical question and answer forums—are here in added measure, dealing with themes of fundamental current significance, and presenting ably qualified speakers to lead in their consideration.

Purchasing Agents in 1943 are looking ahead—to Victory and beyond. But there is not even one thin slice of post-war "Globaloney" on the convention menu. This is a serious and factual appraisal of the present situation and the problems which lie ahead of industry in carrying through the Victory program and adjusting itself to the new technological and economic conditions which are developing out of the present upheaval. Participation in this conference is the surest way of being a step ahead of the problems all industry must face.

★★★★★★★★★★★ KEYNOTE SESSION ★★★★★★★★★★★

Monday, May 24

The economic and industrial world of tomorrow is being forged in the policies and performance of today. The viewpoints of business and of government will be presented at the Monday morning session—a broad and authoritative analysis of the overall situation, with recommendations to guide the purchasing executive through the days ahead.

ARTHUR D. WHITESIDE

President, Dun & Bradstreet, Inc.

Mr. Whiteside is one of the best informed and highly respected business men in America. He has served as a top executive in NRA and OPM and WPB. In 1919, he was a member of the Reparations Committee of the Peace Conference.

DONALD M. NELSON

Chairman, War Production Board

Mr. Nelson speaks to Purchasing Agents for the third consecutive year, as executive director of the nation's war effort. A practical buyer, and Shipman medalist for 1941, he knows the Purchasing Agent's problems and speaks his language.

AFTERNOON SESSION

Forum on WPB and CMP Regulations

There will be no stereotyped addresses. The meeting is open for questions on policy, interpretation, and procedure, which will be answered by:

John H. Martin, Policy Division, WPB, Washington

Charles M. Schoenlaub, Deputy Administrator, WPB, Washington

William E. Arnstein, WPB District Administrator, New York

Consultation service on WPB and CMP regulations will be available to convention delegates throughout the convention period.

PRICE AND SUPPLY PROBLEMS OF PURCHASING

Tuesday, May 25

MILLARD W. MERRILL

CHARLES L. SHELDON

THOMAS W. HARRIS, JR.

MORNING SESSION

Address, "Price Policies and Objectives," by a representative of the Office of Price Administration.

Address, "Fuels—What Kind and How Much?" by Thomas W. Harris, Jr., Division Purchasing Agent, E. I. du Pont de Nemours & Co., Chairman of the N.A.P.A. Coal Committee, and Millard W. Merrill, Purchasing Agent, United States Metals Refining Company, Chairman of N.A.P.A. Fuel Oil Committee.

Address, "Containers—Metal, Glass, Fibre, Wood—What Is the Situation?" by Charles L. Sheldon, Purchasing Agent, Hood Rubber Company, Chairman of the N.A.P.A. Containers Committee.

TUESDAY AFTERNOON

Group and Committee meetings.

TUESDAY EVENING

Annual Banquet. Address by Col. Carlos Romulo, Personal Aide to General Douglas MacArthur in the Philippines.

MATERIALS
YESTERDAY, TODAY AND TOMORROW

Wednesday Morning, May 26

THEODORE G. JOSLIN

GEORGE S. BRADY

Address, "Are Synthetics and Substitutes Permanent?" by Col. George S. Brady, Ordnance Department, Products Branch, Resources and Production Division, Washington.

Address, "Research Produces New Industrial Materials," by Theodore G. Joslin, Director of Public Relations, E. I. du Pont de Nemours & Co., Wilmington, Delaware.

Address, "Where Do Wartime Price and Contract Policies Lead Us?" by Stuart F. Heinritz, Editor of PURCHASING, New York.

Discussion.

★★ KEEPING AHEAD OF THE PROBLEMS AHEAD – PLANNING BROUGHT DOWN TO EARTH – ★★

Wednesday Afternoon, May 26

D. C. PRINCE

Address, "The Problems of an Industry," by George Romney, Managing Director, Automotive Council for War Production, Detroit

Address, "The Problems of a Company," by D. C. Prince, Vice President, General Electric Company, Schenectady.

Symposium, "The Problems of Purchasing," by selected representatives of the National Association of Purchasing Agents.

Presentation of Officers for 1943-1944.

Adjournment.

PROBLEMS OF POST-WAR PRODUCTION

[Data from a questionnaire study sent to 30,000 industrial plants of all sizes by the Research Institute of America]

97% of all companies believe that business should start planning its adjustments for post-war operations NOW!

HOW PLANNING IS BEING DONE

A joint responsibility of company executives **40%**

Special man or new planning department **32%**

Outside consultants **4%**

No definite planning being done **24%**

WARTIME FACTORS WHICH WILL HAVE GREATEST EFFECT ON POST-WAR OPERATING CONDITIONS

New Products **18%**

New Materials **17%**

New Manufacturing Processes **17%**

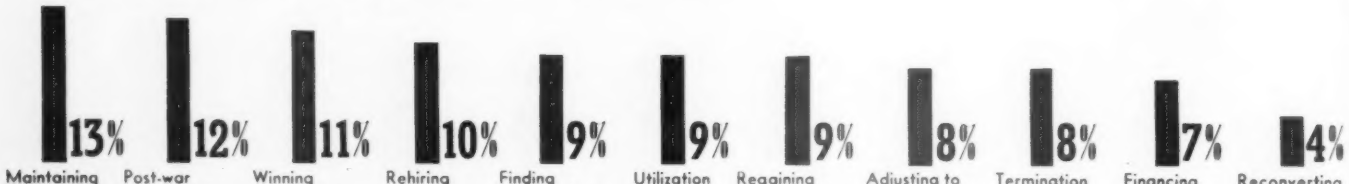
Aftermath of War Controls **16%**

New Competition **13%**

Shifts in Purchasing Power **11%**

Shifts in Population **8%**

MOST DIFFICULT PROBLEMS TO MEET



Maintaining employment **13%**

Post-war labor relations **12%**

Winning new markets **11%**

Rehiring inducted employees **10%**

Finding new products **9%**

Utilization of plant **9%**

Regaining former markets **9%**

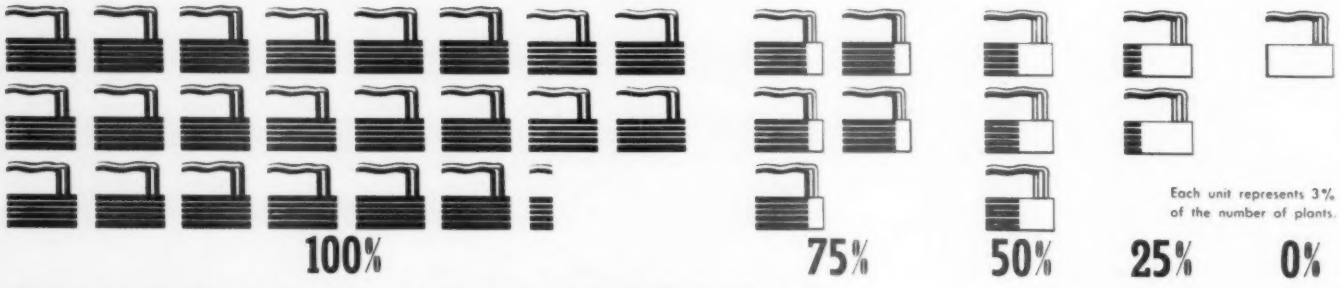
Adjusting to new materials and techniques **8%**

Termination of contracts **8%**

Financing conversion **7%**

Reconverting equipment **4%**

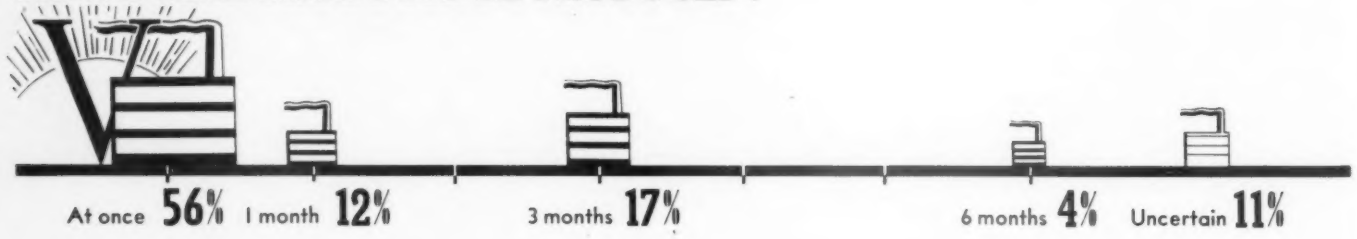
WHAT PART OF PRESENT PLANT CAN BE USED IMMEDIATELY FOR PEACE-TIME PRODUCTION?



Each unit represents 3% of the number of plants.

100% 75% 50% 25% 0%

HOW SOON AFTER "V-DAY" WILL THE FIRST PEACE-TIME PRODUCTS BE PRODUCED?



At once **56%** 1 month **12%** 3 months **17%** 6 months **4%** Uncertain **11%**

Fifteen months ago, this automobile plant finished the last lot of fenders before converting to aircraft production. Presently it will face the problem of reconversion.

POST-WAR PLANNING

Globaloney or Common Sense?

Orderly resumption of a healthy peacetime economy depends on sound planning by industry and government before the problem is actually upon us

The National Resources Planning Board offers a seven-point program

By A. N. WECKSLER

PRODUCTIVE capacity for war in this country has reached a stage which, on the basis of industrial considerations alone, would warrant predictions of victory against the Axis. This confidence in victory has stimulated discussion of the post-war economy.

Governmental planning has been directed into two distinct phases of the post-war economy. The first is an extension of governmental guarantees of minimum living standards beyond the scope of the present Social Security structure. The second is active planning toward reestablishment of a peace-time economy which will be sufficiently productive to support the national debt, to permit expenditure for a sizeable public works and social security program, and to keep a large part of the expanded plant facilities of the nation in operation.

Problems involved in formulating plans for a post-war economy hinge in large degree on the uncertainty as to the course of the war, and the divergence of opinion as to the role of Government after the war.

Excess Plant Capacity

It is generally agreed that a sizeable portion of new plant facility which has been built is not adaptable to a postwar economy, and will have to be either scrapped or maintained as "standby" facility.

It is further indicated through Government study that a substantial part of the expanded war industry will have no peace-time market, and conversion back to consumer goods production presents a puzzling problem. For example, a rough Government estimate shows that 25% of the greatly expanded plane production capacity could supply post-war requirements for airplanes. Such an estimate is inconclusive at best.

The issue is further confused by the fact that a considerable portion of new plant facility is Government-owned. Government-owned plants and facilities, built and building, are valued at close to seven billion dollars, and many of these units are the most efficient units in their respective industries.

Any program calling for the scrapping of plants will of necessity be directed toward scrapping the least efficient units. At the same time, all indications and expressions on the part of Government officials show no inclination toward Government operation of plants which are Government-owned.

These "strong alloy" aluminum ingots are a part of the vastly increased wartime production of this metal—new capacity that must find a place in the post-war economy.

Return to Free Enterprise

The "National Resources Development—Report for 1943", prepared by the National Resources Planning Board and submitted to Congress by President Roosevelt, makes only broad suggestions as to the post-war plans for industry, but the plans are specifically based on a competitive free enterprise system, with curbs of an anti-trust nature to guard against monopoly.

No post-war proposal can envision any quick process to disentangle Government and industry. The war economy has placed Government in the position of being industry's largest customer, and has forced the displacement of a free production, money and distribution system through rigid controls over material, processing, marketing and finance.

If the process of disentanglement goes on without plan, the inflationary and disorderly markets that will result can be laid directly at the door of the Government. The condition of the post-war market will fundamentally determine whether there is to be inflation — whether the organization of industry can support the national debt, and whether a free system can be maintained in the post-war period.

A substantial increase in price levels during the period of the war is inevitable. That such an increase need not be inflationary was validated in the experience of the World War I era, when the major price rises occurred after the war.

However, the war control restraints on industry and on the consumer must be relaxed after the war. If they are relaxed according to a well thought out plan, an orderly post-war market can be developed into a sound post-war economy.

Problem of the Inland Areas

Inland non-industrial areas in which war plants have been established could well become depressed areas if they were denuded of their industrial function in an unplanned post-war economy. Examples of cities which would be adversely affected are Salt Lake City, Utah; Tulsa, Oklahoma; Pueblo, Colorado; and Wichita, Kansas.

Plant facilities which have mushroomed up in inland cities are not the result of any economic demand within the area, and barring a planned adjustment, severe dislocations could result.

Obviously industry cannot initiate a post-war planning program. The considerations involved are too broad, and include military plans on demobilization of the armed forces and the facilities which must be maintained for war production security reasons, as well as posing the problem of 100% cooperation to make any program effective. The overall guidance must come from Government.

There is no compulsion on the part of Congress to accept any plan proposed by a Government agency. But Congress may direct the type of post-war plan that is formulated, by means of specific earmarking of how funds are to be used.

Fundamental Changes Inevitable

Changes in industry will not come as the result of any post-war plan. Current developments in the field of research and invention will dictate many of the changes. Capacity for production of aluminum will reach the two billion pound level in this country, with a production of one billion pounds a year in Canada. Price of aluminum will drop to a point where the metal is closely competitive with copper. Alloy steels will assume a new utility. Plastics will vie in utility with wood,

Temporary housing such as this trailer camp in Erie, Penna., must be replaced by facilities of a more permanent nature.

clay and metals. These competitive factors will be evidenced in the fields of transportation, textiles and processed foods.

The factor of consumer demand after the war is assured through the deferred demand during the period of war. War savings plans and demobilization payments to soldiers will constitute a huge spending force. At the beginning of this year, purchases of war savings bonds had exceeded the sixteen billion dollar level.

If a considerable amount of this money is expended when industry is still in a conversion stage, the excess of demand over supply would be much more marked in the post-war period than during the war.

In addition, if the accumulated savings are expended when heavy consumer durable goods industries are still in a conversion stage, the markets for such goods will have been reduced to a degree.

With the demand and spending reserve to finance consumer goods production assured, there is no problem of stimulating industry. The problem lies in maintaining the level of production to continue output at peak levels.

If the reserve savings are expended according to a general plan, and spending power is continued in the process by stimulating wage payments and profits, it will not be necessary to "prime the pump" through artificial Government spending.

Industry is the Key Factor

A public works program of sizeable proportion will be necessary, both to supply deferred requirements within communities and areas—such as road improvement and extension, rural electrification, etc.—and to provide a means of insuring full employment.

However, it is well recognized that a public works program can constitute only a small portion of the total economy. Construction has been suggested as a means of sustaining a high level of national income, but here again, while construction of housing is necessary to support peak industrial operation, it cannot assure such peak.

As example of the relative importance of industrial processes in the economy of this country during a peak year—consisting in most part of civilian production — can be found in the breakdown of the national economy during 1941, issued by the Department of Commerce. The total national income was $95,618,000,000. Of this total, manufacturing accounted for $27,622,000,000, and wholesale and retail trade accounted for $14,434,000,000. When the totals expended for transportation, power and light, communications, finance and mining are considered, it becomes apparent that the mainstays of a large national income are industry and trade. This does not minimize the importance of agriculture, which accounted for $7,338,000,000, and contract construction with a total of $3,466,000,000, but it does highlight the major role of industry in supporting a high national income.

A Seven-Point Program

The National Resources Planning Board report as it concerns industry, makes only general recommendations on the conversion of industry from war production to civilian output. An outline of the recommendations indicates the type of problems involved, and suggests some basis for a plan for their solution. Text of the seven-point outline follows:

"Among the various policies for terminating and converting war plants to peacetime use, the following are recommended for consideration:

"1. Arrange for the orderly conversion to civilian use of unneeded war production facilities, through:

"(a) Procedures to dispose of Government-owned plants to private operators willing and able to proceed with conversion of plants to peacetime use and to early operation.

"(b) Prevention of monopoly control of plants in the interest of a single group or industry. Large Government-financed war production plants, especially those producing basic metals and materials, should be distributed among numerous operators to encourage healthful business competition.

"(c) Planning for a more desirable regional distribution of manufacturing from the standpoint of national defense and local diversification, by retaining in operation selected plants, financed in new industrial areas during the war by the Defense Plant Corporation or directly by Government allowance of rapid depreciation.

"(d) Technical assistance to private operators of war plants to find the most appropriate peacetime use for their buildings, equipment, and labor skills in making products which could be economically distributed from the community in which the plant is located. Government should help plan the forms of industry conversion by supplying the probable patterns of consumer demands and the related pattern of demands for durable producer goods.

"(e) Placing of Government orders for new major development projects, especially in the fields of urban reconstruction, river basin development, agricultural rehabilitation, and modernization of transportation by Government agencies, the Reconstruction Finance Corporation or the modified form of Federal Development Corporation sug-

Railroads will face new competition for the heavy freight movements which are a necessary feature of expanding activity. Air freight transport injects a new competitive aspect in the race between rail, water, and over-the-road carriers.

gested below. (The procedure would stimulate activity in such basic industries as steel and light metals, other construction materials, machinery and machine tools, as well as in the construction industry itself.)

"(f) Provision for plant rehabilitation grants to be used for conversion of plant to peacetime production, and with grant contingent on actual conversion to production of peacetime goods within a specified period. (This procedure might be appropriate for industries with which Government agencies would not be likely to place orders under 1 (e) above, but where dislocation of whole communities and consequent losses of public and private investment might be avoided by quick conversion.)

"(g) Granting of low-interest-rate Government loans to projects approved for conversion.

"(h) Immediate provision in Federal tax laws for establishment of 'Post-War Conversion Reserve', limited to use within a short period after termination of war contracts.

Military Production

"2. Select the war plants to be maintained in operation or in stand-by condition. Before the end of the war, the war facilities to be retained in operation or in stand-by condition must be selected in order that local communities and the operating industries can adjust their plans to meet the stand-by status of plants so selected.

"3. Continue certain war contracts, in present or renegotiated form, needed for maintenance of military forces, for experimental production of improved military equipment, for requirements under existing lend-lease agreements, for stockpile war reserve, or for other governmental needs, so far as possible in areas where the replacement of war production by peacetime activity is likely to be slow and difficult and where sudden termination of contracts, therefore, would cause undue hardship and disruption of community life.

"4. Arrange for the liquidation of all other war contracts as speedily as is consistent with economic and social welfare, and with reasonable regard to employment conditions and liabilities of contract holders, in order to:

"(a) Prevent unnecessary use of labor and materials, since the supply of finished munitions on hand would then be ample for a peacetime army and since experimental production would be devoted to the making of improved military equipment.

"(b) Stimulate rapid conversion of plant and machines to peacetime production.

"5. Assist small producers and distributors and small enterprises which are war casualties. This assistance should include technical advice, marketing aids, and favorable terms of financing.

New Types of Enterprise

"6. Develop new industries, new processes, and improved products, by research work within the Government, increased assistance for research to private activity, aid in the dissemination of information on new material, new processes, and new uses; and by maintaining free access to the use of both old and new materials and processes unhampered by misuse of the patent system. Provision should be made for access to those new inventions which are brought out by publicly supported or tax-exempt institutions.

"7. Extension and new forms of joint private and governmental partnership, through use of mixed incorporations, granting or insurance of loans, or other joint ventures, etc. Government is already taking considerable part in the management of the many war industries which have been greatly expanded by the use of Government funds. Consideration should be given to the desirability of various types of partnership in the direction of those industries of crucial importance in both a wartime and a peacetime economy and in which the Government has made great investments. In this category are aluminum, magnesium, shipbuilding, and aircraft. Government has a direct responsibility and should participate in the decisions as to what areas and what concerns should continue to operate in these industries."

Controls to be Retained

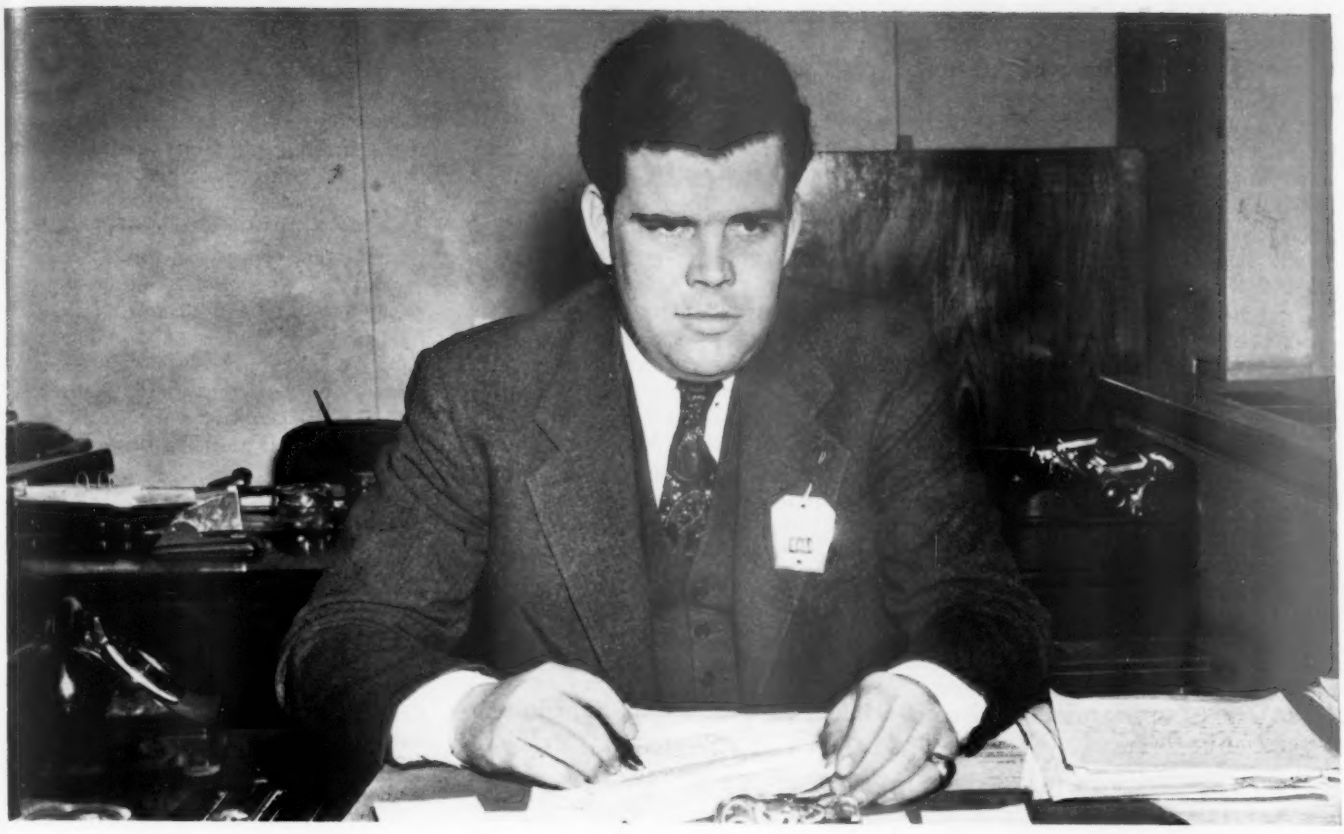
In addition to considering conversion problems, the post-war study suggests that Governmental controls over materials and durable goods be retained—the former to be allocated and the latter to be rationed—until supplies become adequate.

The function of manufacturing is advanced as purely a matter for private enterprise. Transportation, power, land development and public housing are considered to be fields for cooperation between industry and Government.

Fundamentally, the post-war report is an admixture of practical planning and suggestion with recommendations of social change. The latter was made the target for congressional criticism. Also it is peculiarly unfortunate that the report was launched during a period when political lines are being established in anticipation of the Presidential campaign.

While the conclusions arrived at may be controversial, the report served to demonstrate that post-war planning is essential to an orderly resumption of a healthy peacetime economy.

The plastics industry has already proved itself a factor to be reckoned with in any preview of the future. This tableware is destined for Navy use, and will have its counterpart in production for civilian use.



PRODUCTION SCHEDULING UNDER CMP

By THOMAS J. McBREEN

WPB Senior Information Specialist Assigned to Controlled Materials Plan Division

MAJOR objective of the Controlled Materials Plan is to provide an over-all means of scheduling war production. This calls for elimination of existing production bottlenecks and establishment of a means of preventing new bottlenecks from developing.

Essentially, CMP is the war plan of assuring a supply of coordinated amounts of basic materials, components, and sub-assemblies available to manufacturing facilities at such time as they are needed for production of completed wartime products. By using materials in accordance with such a plan, war production will be channelled along lines which will yield the maximum amount of completed war items for effective use on battlefronts in accordance with over-all military strategy the Joint Chiefs of Staff of the U. S. Army, and the military and economic planners of the United Nations.

In order to achieve this production scheduling, it has become necessary for the Controlled Materials Plan Division of WPB to make special provisions for the transition from individual plant scheduling which existed under PRP to over-all program scheduling under CMP.

In completing this transition by July 1, 1943—the cut-off date of PRP—it has become necessary for the Controlled Materials Plan Division to make special provisions for adjustments in production schedules—particularly with respect to controlled materials. It has also been necessary to provide an over-all method of adjusting particular production schedules of other than controlled materials producers, in view of the fact that allotment numbers, validating orders which have already been placed may interfere with the sequence of orders on producer's order boards.

Adjusting Rated Orders

Under Interpretation No. 1 of CMP Regulation No. 3, assignment of an allotment number to a previously rated order in effect constitutes an upgrading of the rating, and the adjustments in delivery schedule under this rerating procedure must be made in accordance with Priorities Regulation No. 12.

This Regulation provides: "The sequence of rated and rerated deliveries shall be determined as if the rerated item had carried the new rating at the time the first rating covering the delivery was received, and the person whose deliv-

ery is reated shall make any necessary change in his production or delivery schedule promptly on receipt of the rerating."

This means that the up-rating of an order by the application of an allotment number relates back, for the purpose of determining the sequence of delivery, to the date on which the original rating was applied to the order.

For example, assume that two orders bearing identical ratings were received on March 10 and 12, 1943, respectively. When allotment numbers are applied to these orders, they are both up-rated, with the result that the same delivery schedule is maintained and the same production schedule is authorized. The date on which the allotment number is applied does not affect the order of priority as between the two orders. However, if the March 12 order receives an allotment number and the March 10 order does not, the March 12 order must be given preference in the producer's schedule.

In the instance where both orders were subject to application of allotment numbers, Priorities Regulation No. 1 would govern the adjustment of production schedules, inasmuch as the allotment numbers relate back to the time the order was originally placed.

When a manufacturer has a number of production orders in his schedule, the problem of making such adjustment as is necessary is obviously greater than when there are few orders in the schedule.

Applying the Rule

Under the terms of Priorities Regulation No. 12, the manufacturer must take into consideration the following qualifications to this general rule:

1. He may not, by reason of the application of an allotment number, divert material specifically produced for an order bearing a preference rating higher than A-2 if such material is completed at the time the allotment number is received or is scheduled for completion within 15 days thereafter. This holds true unless the diversion is specifically ordered by WPB.

2. He shall not be required by reason of the assignment of an allotment number to terminate or interrupt a production schedule in any case where such action would result in substantial loss of production. However, in any such case, the interruption of the production schedule required because of the application of the allotment number shall not be postponed more than forty days after the number is received by the manufacturer.

Thus, in practical application, production schedules may or may not have to be adjusted because of the receipt of up-ratings prior to 40 days from the time the numbers are applied. The governing factor in this instance will be loss of production through interruption of the schedule.

In adjusting production schedules, manufacturers should also be careful to note that Direction No. 1, CMP Regulation No. 3, provides that orders by dealers, distributors, and jobbers placed prior to April 8, 1943, calling for delivery during the second quarter, shall be deemed of equal rating to authorized production schedule orders despite the fact that they are not accompanied by allotment numbers.

Effect on Production Schedules

This would operate in the following manner in modifying a production schedule: Two orders rated AA-1 are already in the operator's schedule. One of these is converted to an authorized production schedule order while the other is not. An order bearing an AA-1 priority has been placed with the producer by a distributor prior to April 8. All orders call for delivery in the second quarter of 1943. The distributor's order will have an equal rating to the authorized production schedule order, while the order which was not converted will have a lower rating then both. Presuming that the AA-1 order which was converted was received earlier, in point of time, by the producer than the distributor's order, the converted order will have preference in the production schedule. In this instance, the production schedule would be as follows:

1. Order rated AA-1 to which allotment number has been assigned.
2. Order rated AA-1 which was placed by the distributor.
3. Order rated AA-1.

Controlled materials producers are faced with an additional rating problem. Special Directives have been issued with respect to steel, copper wire mills, brass mills, and aluminum bar and rod producers.

The steel directive prohibited the displacement of any rated order in a mill production schedule prior to April 15, if it had been scheduled for delivery during the second quarter of 1943, as of March 22, 1943, merely because of the fact that it had not been assigned an allotment number. However, after April 15, it became possible to displace such orders in mill production schedules.

In the case of copper wire mills, brass mills, and aluminum bar and rod producers, similar protection was granted to orders which had been scheduled for delivery during April. However, in all three instances, it was required that orders placed for delivery during May and June be accepted. This had the effect of placing CMP in full operation with respect to steel producers, brass mills, copper wire mills, and aluminum rod and bar producers as of May 1.

However, in the case of copper wire mills, and brass mills, the Directives specifically provided that orders which were not placed in accordance with the time limits prescribed in Schedule III of Regulation No. 1, did not need to be accepted. In the case of copper, these time limits vary from one week to two months.

With respect to producers of controlled materials, CMP is virtually in full operation at the present time. Some special cases are being handled on Directives, including some ordnance items which are purchased by the Navy and Army. However, for the most part, controlled materials orders are now placed in accordance with CMP, and must be scheduled and produced in accordance with the provisions of CMP Regulations.

Transition to CMP

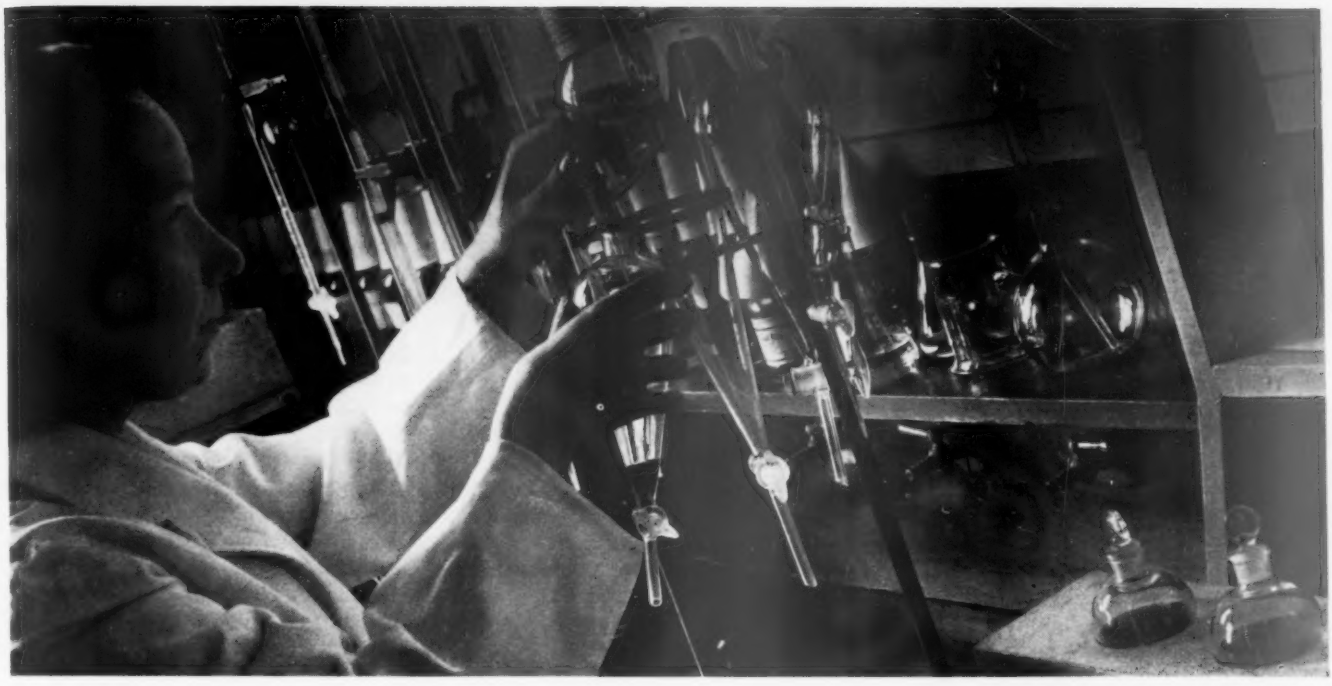
Full operation of CMP with respect to other than controlled material orders will not begin until July 1. Further Directives to specifically guide industry in the transition from PRP scheduling to CMP scheduling will be issued.

When the transition is completed the major problems which will develop under the plan will be chiefly those concerning advance scheduling. This is the most important phase of program scheduling, and is being planned by WPB officials at the present time.

An important factor which must be considered in advance programming and scheduling is flexibility which is required in war production. At the present time, it is deemed desirable to program war production as much as a year in advance. This will mean that basic programs must be established that far in advance, and estimates of material supplies must be available for the same period.

However, during such a period it

Continued on page 252



HELP FROM TESTING LABORATORIES

Expert technical assistance is available to the Purchasing Agent from outside sources, and often the independent viewpoint is a distinct advantage. Here are a score of practical examples selected from a variety of industrial procurement problems

By

E. L. CADY

A MID western factory needed bed springs for the bunk houses for the personnel of its new war plants. Five makes of springs were considered. All were from reputable makers.

Being unaccustomed to buying such goods, the purchasing department turned the problem of selection over to a testing laboratory. The laboratory set up a mechanical specification, and a mechanical method of testing the springs. As a result, one make of springs was found to be outstandingly good, three just fair, and one very poor for this purpose, although the "eye values" of all were equal.

The factory will now have springs that will stand up, and that will have the highest resale value when peace relieves the plant of any need for bunk houses but brings the expected famine of consumer goods in which it will be a patriotic duty to release such supplies into channels which will get them into the hands of consumers.

An eastern plant had been in the habit of contracting for such services as the waxing of its floors and the washing of its office windows. As the war drained the manpower away from the contractors, the plant found itself forced to take over more and more of these chores.

Choosing the Right Material

Not being a skilled selector of the necessary supplies, the purchasing department called in a testing laboratory. Tests were run on waxes, and on powdered soaps, and the like. It was found that the contractors had used supplies of less than the most desirable characteristics; in the future this procurement department may specify the supplies to be used by such contractors and thus secure higher grade services at reduced costs. But the supplies specified by the laboratory include those from several competing makers, and the Purchasing Agent is in position to function as selector in full knowledge of what he is handling, and the cleaning and upkeep problems are in hand accordingly.

A maker of machine tools found that many supplies manufacturers have their products tested regularly by reputable laboratories. These tests are made to convince department store buyers of quality, by distributing certified copies of this independent test report. But comparable tests serve this industrial buyer just as well by providing expert appraisals of competitive products.

A producer of food products joined the growing army of buyers who use laboratories to protect their

companies against legal difficulties. The apple butter used in the product is tested for content of arsenic which might have been left on the apples from the spraying.

All of those instances show the trend toward an increasing use of laboratories by purchasing departments, for the direct control of quality in materials and supplies.

Implementing Centralized Control

Another use is to coordinate central purchases. As an example of this, the purchasing department of a textile company having many branch plants, must buy water treating supplies. The important point is to get the water at each plant softened or otherwise treated to suit the processes. As soon as a new plant is set up, or an old one makes a process change which involves change in the water treatment, a laboratory is called in to establish the treatment. Several alternative treatments are recommended if possible, and are certified as acceptable. The purchasing department then selects the suppliers of the treating materials and equipment from this list, usually making the selection so that the purchases of one type of supply are increased and the bargaining position of the company improved accordingly.

Product development leads to the use of laboratories.

A constant flow of information on new raw materials, equipment and processes is received from a laboratory by the purchasing department of a plastics moulder. The purchasing department keeps most of such records, and when anything unusually significant is received, makes an economic analysis of the probable value of the product or process. This information in turn is passed along to the product development department to generate ideas, to the sales department for market research, and to the production heads to look for possible pitfalls. The result is, when a new process or method is adopted, the purchasing department which did the original sifting of data received from the laboratory, knows exactly how to proceed to get quickest and most satisfactory results.

Tests Used as Evidence

Photomicrographic records (photographs taken through a microscope) are kept of steels and of textiles. These records are made by laboratories at the request of purchasing departments. The records are readily filed for comparisons. If a new type of casting, forging or cloth is being worked out, the "photomikes" show every step of the improvement. They can be used to guide a new source of supply in avoiding errors made by old ones. On occasion they are attached to purchase orders as the simplest form of specifications. They show over long ranges just what qualities each supplier produces. And when arguments about qualities come up, or claims for defective material, they are indisputable evidence.

Information for its own sake, is also to be had from the laboratories. A machinery manufacturer needed more information on refrigerants. Five sources of data were found in the local library. Then a laboratory known to be skilled in the interpretation of foreign language as well as English language sources, was called in. The laboratory found more than a hundred sources, digested them, and submitted an indexed report which will serve the purchasing department in its procurement of materials, as well as serving the product development department in working out its problems.

The protection of confidential information leads to the use of laboratories.

One paper products plant calls in outside laboratories to set up the rough basic procedures for making special tests on new products or raw materials. The advantage is, the outside laboratory has a crew of chemists who can use the necessary trial and error methods to develop tests, and keep the plant laboratories free for their special work. The resulting basic procedures are worked into specifications by which raw materials can be purchased. Then the plant's own laboratories refine these "specs." The net result is a set of specifications which will bring suitable raw materials into the plant, but which will not reveal to any supplier the real tests by which the plant's laboratories grade the materials for blending.

The Laboratory as Umpire

In another plant, the plant chemist is requested to write the specifications of all new raw materials. Approaching this task from a strictly

technical viewpoint, he writes specifications so tight that although materials bought according to them would never give any production line trouble, they would reveal the processes being employed and in some cases would also drive the buying prices out of reach. The purchasing department then recommends modifications. A laboratory is called in to umpire these disputes, and often to iron out further disputes occurring between the plant chemist and the suppliers. The laboratory keeps the specifications just above the "trouble level" . . . this expression was coined by the Purchasing Agent, and is useful for telling suppliers just what he wants. The laboratory continues as arbiter, often over a period of years, while the plant chemist redevelops his specifications to get more of what he wants into them without causing procurement problems.

A process plant has a laboratory run grinding tests on all new lots of materials received. Copies of the test reports go to the purchasing department to inform as to actual values received—the cost to grind is an important factor in the overall cost of this raw material—and to the production department to predict the probable production speed on each run.

A chemicals buyer has two processes which employ the same types of raw materials. In one process, small traces of impurities are of no importance, and routine tests carried on in the plant laboratory are enough to keep the finished product under control. In the second process, small traces of impurities are harmful. Therefore an outside laboratory is employed to test all incoming shipments of materials intended for this process. The laboratory is trusted by suppliers and buyers alike. Any materials it condemns for impurities, are routed to the number one process in which these impurities do no harm, and are re-invoiced at the impure products prices.

Looking for Production Economies

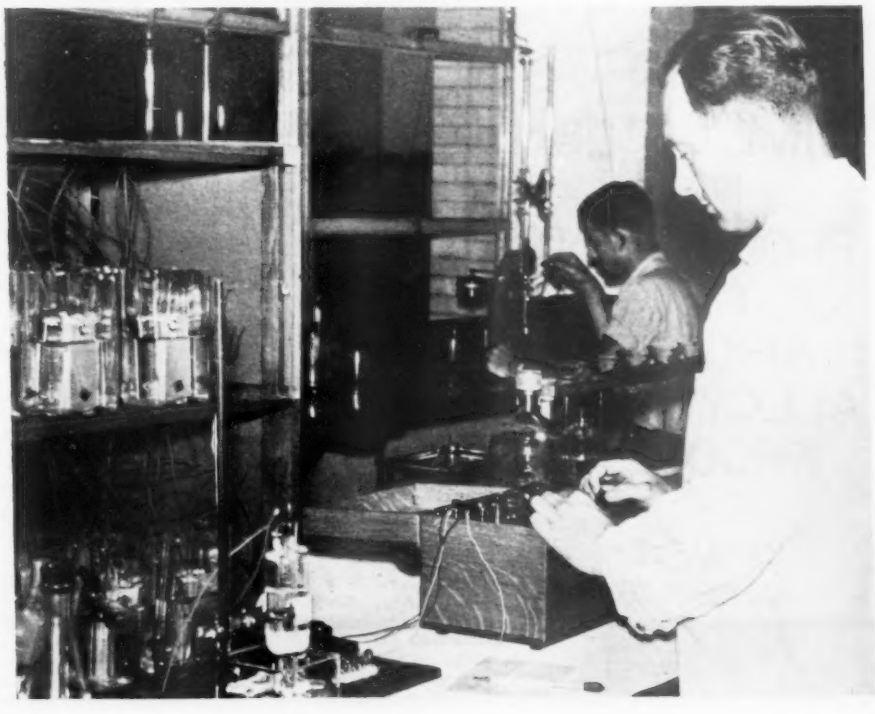
A producer of consumer goods makes a practice of buying up brands which are not selling well, redesigning them, and putting heavy sales promotion behind them. Whenever a new product is taken on, the laboratory is told to check up the raw materials used and look for possible savings which the purchasing and production departments can make. In one example, it was found that a product contained two agents, one of which was for cleaning and the other for polishing. Old specifications demanded a soap with no free alkali as the cleansing agent, and if used alone this would have been ideal. But the polishing agent contained free alkali, which nullified the whole purpose of buying this higher priced soap as a cleanser.

Scrap and salvage problems are bringing increased use of laboratories by purchasing departments which dispose of scrap. One centralized department employs a laboratory to make continual studies of scrap and salvage problems. First item in these studies is to find ways to recover such materials as oils, solvents, and metals for re-use in the company's plants. Second item is a continuing evaluation of the new metals recovery plants which are being set up under government supervision for the mass recovery of copper, zinc, tin and kindred critical materials. From the laboratory the purchasing department gets advance information as to the real values of those plants, and when they may be expected to make significant differences in the handling, sorting and sale of scrap. The information is used for long range planning.

The purchasing department of a textile company has its scrap pile watched for the sources of failure in machine parts as well as sorted by types of scrap to be sold. When any one machine part appears in large quantities, investigations are made. The production department is asked if any new operating conditions are being imposed on that part, indicating heavier loads and the need for new and better types of replacements. The laboratory may be asked to make a metallurgical investigation of the part, to see if better materials or better heat treatments of steel, etc., might not produce longer wear. With the resulting facts in hand, suppliers are contacted.

Buying lubricants and bearings on specifications is an old story. In one steel mill, the spent lubricants from bearings are analyzed by the laboratory to see if the specifications should be changed. The condition of spent lubricant may indicate that new and heavier loads are being imposed upon bearings. Excessive foreign material suggests the need for new lubricators or other application methods, oil seals, or other means to keep the bearings cleaner. Excessive amounts of metallic particles in the spent lubricant, indicate rapidly advancing wear in the bearings, with probable replacements immediately ahead.

Laboratory recommendations based upon these analyses, are reviewed by the maintenance department, then turned over to the purchasing department for contacts with suppliers.



Planning for Peacetime

A company wholly engaged in war work, is keeping its laboratory busy planning for the oncoming peace. New textiles are investigated for laundering qualities, color fastness under sunlight, strength when wet and when dry, permanence of firmness or of softness, etc. Paints and

Continued on page 260

SCHEDULING IS A LONG

Knowledge of time cycles is essential to users of Aircraft Alloy Steels

LIKE many another war production problem, critical shortages in steel very often stem from a failure to understand the time cycle for the procurement of aircraft alloy steel products.

This is due partially to the introduction of new and untrained personnel into industrial purchasing offices and, in some cases, to a lack of previous experience in purchasing large quantities of steel. This lack of understanding covers both the proper procedure under governmental regulations and the actual production problems involved. For steel carries the longest production time schedule of any prime material.

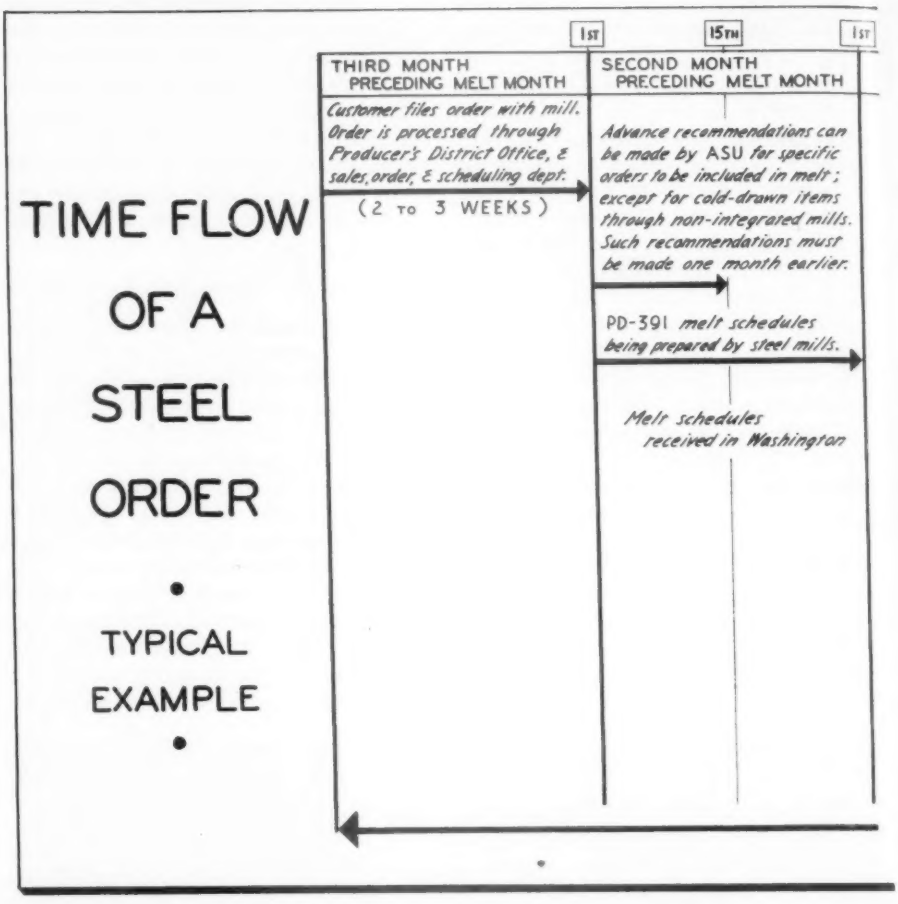
To help meet the problem, the Material Distribution Branch, under the direction of Lt. Colonel A. E. F. Peterka, has published the two accompanying flow charts, which are being distributed to industry.

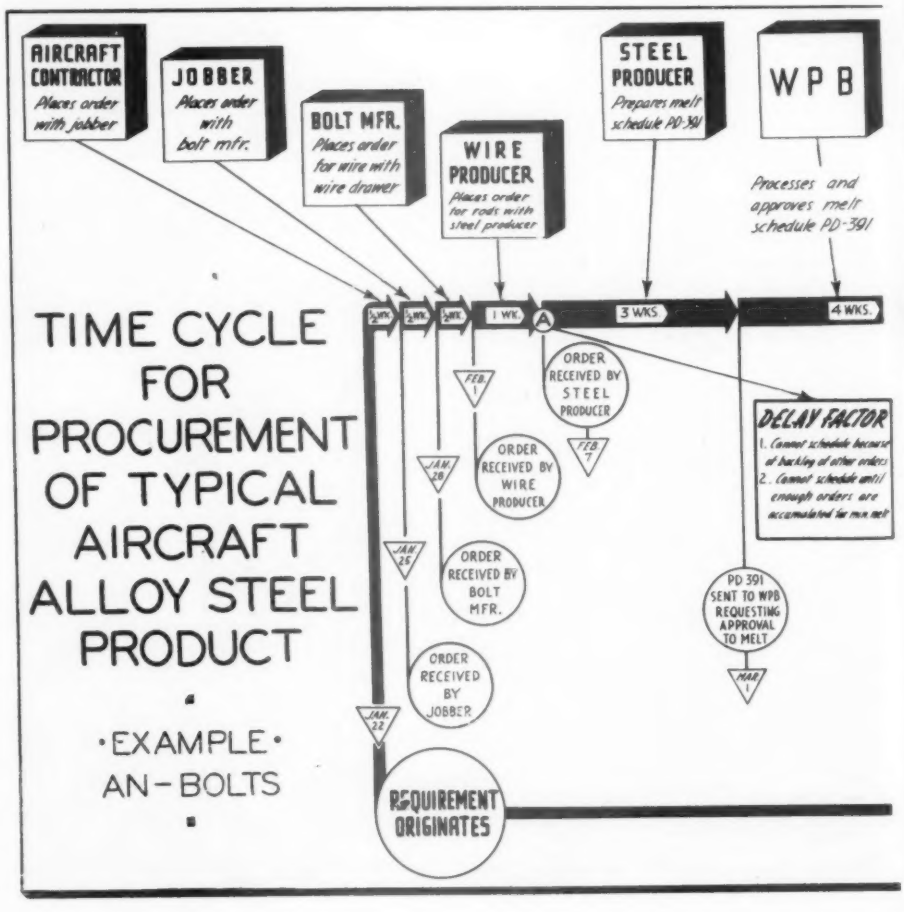
As the chart illustrates, it may take approximately 28 weeks to get standard AN bolts, a typical aircraft alloy steel product. And the cycle may be longer because of many unanticipated delay factors.

Often a cause of critical shortage is the failure to realize different products require varied time cycles for completion. Production of heat treated cold drawn bar, for example, takes longer than either billets or hot rolled bar, and sheet and strip require more time than billets, and about the same time as hot rolled bar.

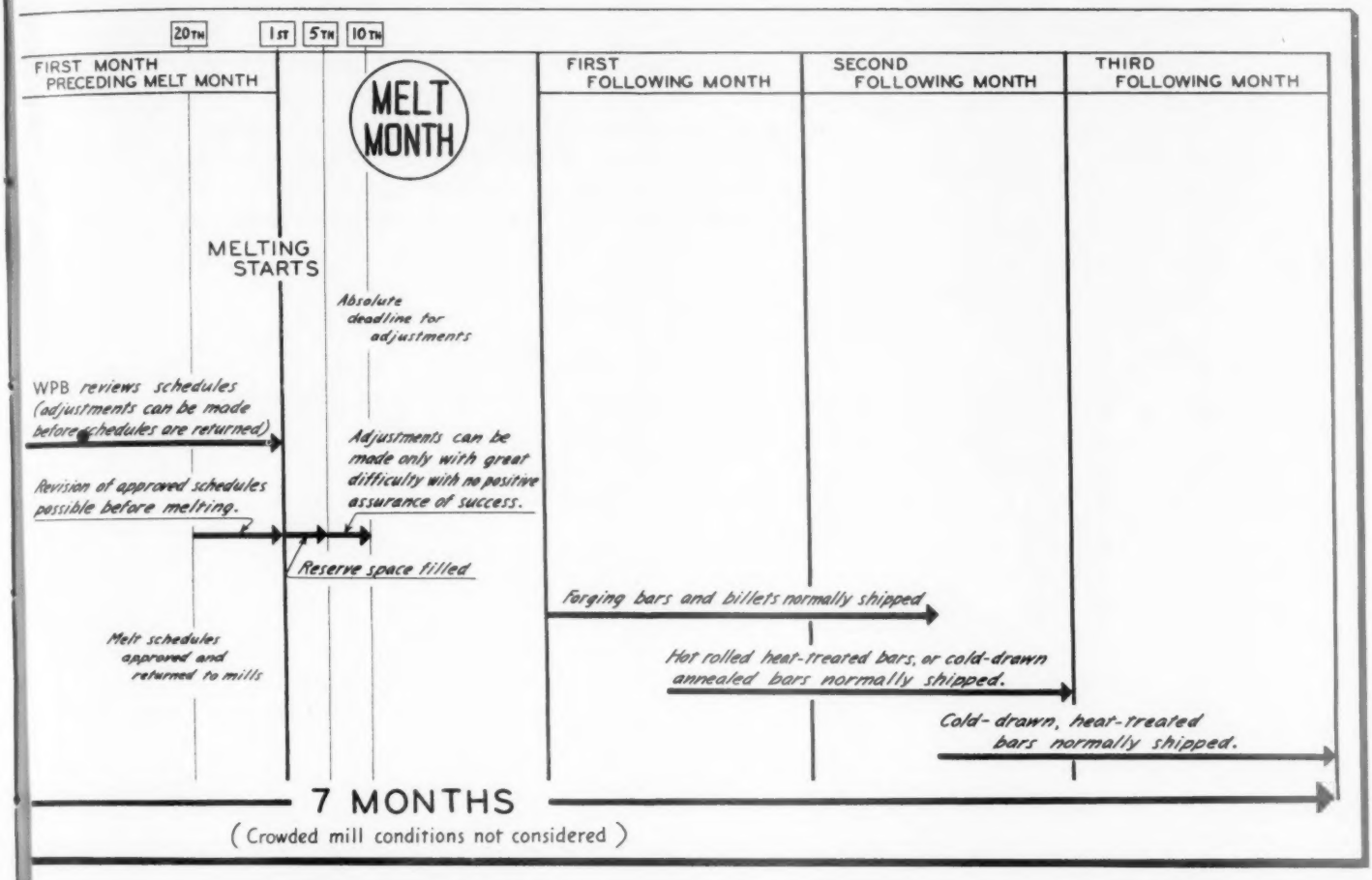
The time cycles shown on these charts vary slightly with Controlled Materials Plan Schedules. CMP, for example, requires manufacturers to cover their order for cold drawn alloy steel under 1" to 1½", with an allotment number at least 120 days in advance of the first day of the month in which the delivery of the steel is required. Most steel mills establish, as a cut-off date for scheduling alloy steel orders, the 15th of the second month preceding the month of melting. Spotting this on the chart entitled "Time Flow of Steel Orders" it is seen that the average time elapsing between that

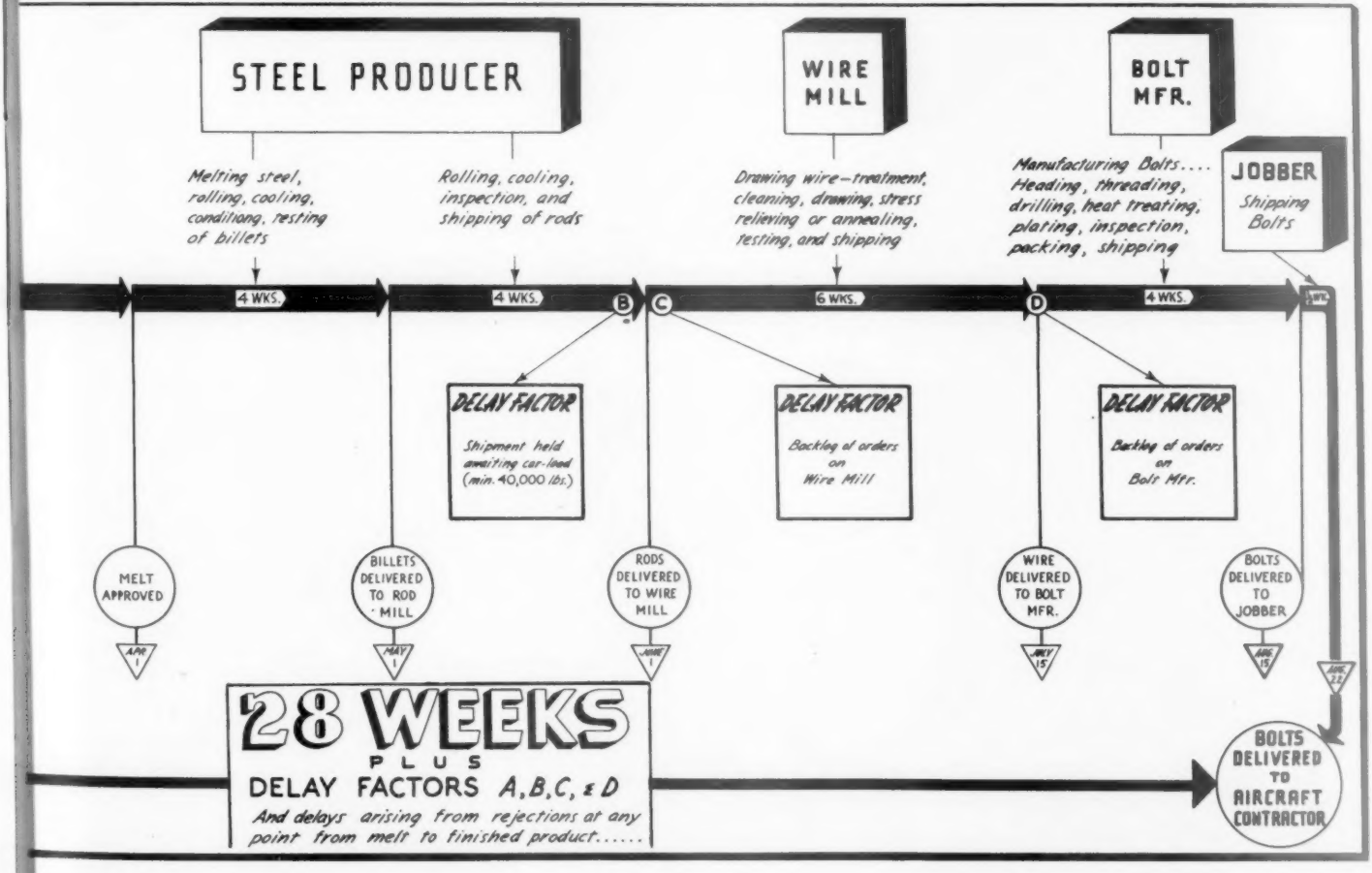
Continued on page 250


TIME FLOW OF A STEEL ORDER
• TYPICAL EXAMPLE •
1ST
15TH
1ST
THIRD MONTH PRECEDING MELT MONTH
SECOND MONTH PRECEDING MELT MONTH
Customer files order with mill. Order is processed through Producer's District Office, & sales order, & scheduling dept.
(2 TO 3 WEEKS)
Advance recommendations can be made by ASU for specific orders to be included in melt; except for cold-drawn items through non-integrated mills. Such recommendations must be made one month earlier.
PD-391 melt schedules being prepared by steel mills.
Melt schedules received in Washington



RANGE OPERATION TODAY


20TH
1ST
5TH
10TH
FIRST MONTH PRECEDING MELT MONTH
MELT MONTH
FIRST FOLLOWING MONTH
SECOND FOLLOWING MONTH
THIRD FOLLOWING MONTH
MELTING STARTS
Absolute deadline for adjustments
WPB reviews schedules (adjustments can be made before schedules are returned)
Revision of approved schedules possible before melting.
Adjustments can be made only with great difficulty with no positive assurance of success.
Reserve space filled
Melt schedules approved and returned to mills
Forging bars and billets normally shipped
Hot rolled heat-treated bars, or cold-drawn annealed bars normally shipped.
Cold-drawn, heat-treated bars normally shipped.
7 MONTHS
(Crowded mill conditions not considered)



FEDERAL PROCUREMENT POLICIES

Procedures have been streamlined to enable Federal procurement officers to cope with the urgent demands of wartime purchasing. Experience with these emergency policies suggests the advisability of a permanent acceptance of these business-like methods.

By CLIFTON E. MACK
Director, Procurement Division U. S. Treasury Department

WAR economy drafts many changes, stimulates invention and discovery. New developments occur alike in industrial technology, medicine, social relations and government. Innovations in Federal procurement, perhaps less sensational than in other fields, take their proper place among the period's phenomena. It remains but to appraise these expedients in the light of their potential value for postwar procurement. What factors in the war economy, for example, necessitated the substitution of negotiated purchasing for war needs in lieu of the formal or statutory procedures laid down by sections 3709 and 3710, of the Revised Statutes? To what extent will these factors prevail in the reconstruction and in the peacetime economy to follow?

The statutory method of Federal purchasing requires that all purchases and contracts for supplies or services be made by advertising for proposals a sufficient time previously, a public bid opening, and award to the lowest responsible bidder meeting minimum specifications and required deliveries; the negotiated process permits the making of purchases without regard to these or related statutory purchase regulations. The First War Powers Act empowered the President to authorize Federal agencies to suspend restrictions pertaining to the making of contracts "whenever he deems such action would facilitate the prosecution of the war." Executive Orders 9001 and 9023, extending this authorization to various agencies, including the Procurement Division, stated that "advertising, competitive bidding, and bid, payment, performance or other bonds or other forms of security, need not be required." Furthermore, the authorization applied to "all types and kinds of things and services necessary, appropriate, or convenient for the prosecution of the war ..... without any restriction of any kind, either as to type, character, location or form." By certifying that "such action will facilitate the war efforts," contracting officers may administratively determine which purchases shall be made under these powers.

Similar provisions for war needs had previously been included in various appropriation acts for Army and Navy. The First War Powers Act and Executive Orders pursuant thereto extended the use of the new method of purchase to other agencies, and to all supplies and materials, with the single restriction that their purchase must further the war effort. Much paper work was thus eliminated. In practice it is merely necessary to secure price quotations from suppliers (by face-to-face dealings, telephone or telegraph, subject to subsequent confirmation by letter; or informal quotations by letter) and to issue purchase orders which constitute the contracts. The results are speed in securing deliveries, reduction in the cost of handling transactions, and more favorable prices. Executive Order No. 9001 stressed the need for "all-out industrial mobilization" of the country, and indi-

CLIFTON E. MACK

IN THE POST-WAR ERA

cated that the elimination of statutory restrictions on contracting would aid in "the spreading of war orders; the conversion of facilities; the assurance of efficient and speedy production;....." Agencies granted this authority were directed to work with the Office of Production Management (later the War Production Board) to achieve these objectives.

Negotiation Becomes Mandatory

The negotiated method of making war purchases under the First War Powers Act was made mandatory by the Chairman of the War Production Board in Directive No. 2 of March 3, 1942, and as amended October 10, 1942. This policy pronouncement has important implications for Federal procurement practices. Here is stated that under existing conditions factors other than price and the like are paramount; also, exactly what these prior considerations are and their relative importance. The War Manpower Commission furnished information relative to areas of acute labor shortages. In order to mobilize the productive facilities of all small business concerns, Smaller War Plants Corporation advised of their available plant capacity.

While section 3709 provides the purchasing official with legal safeguards and precludes favoritism in making awards, section 3710 protects the rights and interests of bidders or their representatives:

> "Whenever proposals for supplies have been solicited, the parties responding to such solicitation shall be duly notified of the time and place of opening the bids, and be permitted to be present either in person or by attorney, and a record of each bid shall then and there be made."

Bids are tabulated and evaluated. With respect to individual items, award for the entire quantity[1] is then made to the lowest responsible bidder[2] meeting all conditions of the invitation. As an illustration, in the event bids were requested for 5,000 office desks, the award would be made to the low bidder quoting on the entire quantity. Total needs, however, may be divided on a zone basis. It would appear that these methods favor suppliers with limited capacities for production. Actually, this modification does not assure distribution of the business, because the same supplier may be the low bidder in each instance.

Bids Without Competition

Even a cursory review of the numerous decisions of the Comptroller General indicates that statutory purchase procedure does not invariably evoke price competition, with the Government getting the lowest possible price. Inasmuch as the purchasing agency determines the method of advertising, the number of potential bidders reached may prove entirely inadequate. In the words of one writer[3], "A notice thumb-tacked to a bulletin board in a public building unfrequented by suppliers, a mailing list compiled with neither zeal nor information, shy little announcements in voluminous general newspapers published in towns that include the locations of an excessively small number of the possible bidders—each of these finds its use ....." On the other hand, public bid openings at Washington, D. C., though designed to attract bidders or their representatives, are very poorly attended. It is not unusual for only a handful of bidders to be present at a public bid opening of several hundred bids.

It is fundamental that there should be free and open competition in the spending of public funds for supplies, materials, and equipment. Restrictions and conditions imposed on business firms interested in selling to the Government often tend to estrange concerns which are unfamiliar with Federal procedure. In fact, the chief criticism of Government procurement is that it places primary emphasis upon statutes, orders, and legal interpretations of the General Accounting Office and the courts, rather than upon materials, manufacturing processes and markets. In contrast to the commercial purchasing officer who concentrates on commodities and markets rather than fundamentals of contract law, the Government procurement officer is typically a specialist in Federal rules and regulations. Whereas the commercial Purchasing Agent exercises policy-making powers and administrative responsibilities, in Federal procurement the Government purchasing officer discharges legally delimited administrative duties. Federal procurement is circumscribed by many requirements, of which the following are typical:

1. The requirement of award to the lowest responsible bidder meeting specifications and required delivery, consideration of a nonprice nature notwithstanding.
2. The limitation (in effect) of the contract period to not more than twelve months.[4]

[1]Unless the right to split items is specifically reserved to the Government by the Invitation to Bid award must be on an item basis.

[2]A lowest responsible bidder is one capable of exercising skill, judgment and integrity necessary to faithful performance of contract, presupposing financial resourcefulness.

[3]Policies and Procedures in Federal Civilian Procurement, 1941, by C. C. Linnenburg, Jr., p. 94.

[4]Government contracts, though not necessarily limited to twelve months, for all intents and purposes are so restricted generally by appropriation policy and procedure.

This article is based on a comprehensive study covering the development, principles, and methods of Federal procurement, authoritatively compiled by the man who is responsible for the government's non-military purchasing program, the largest operation of its sort in the world. Mr. Mack's book on "Federal Procurement" will be published shortly by the Government Printing Office, Washington.

3. The prohibition against the making of supplemental contracts.
4. The general discrimination against purchase of proprietary products.
5. The requirement that tie bids (i.e., where all factor — time, delivery, discount terms, etc. —are the same) be awarded by lot.

Commercial purchasing personnel would find it impossible to function effectively if bound by these and similar restrictions.

Data collected by the Procurement Division for the Temporary National Economic Committee attested that the Government purchases at unfavorable prices because of the absence of true competitive bidding. Reports on 330,000 bid openings by 39 Federal agencies for the twelve-month period ending November 30, 1938, showed that 23% of the openings resulted in two or more identical bids, 10% in either all identical bids or in two or more of the lowest being identical. The Federal Trade Commission's docket has also been burdened with numerous cases of identical bidding on Government contracts. Frequent use of the multiple basing point system and of patent arrangements serves to explain some instances of non-collusive identical bidding.

Expensive Procedures

According to steel company officials, the Government has paid more for copper and steel than do private buyers chiefly because of the publicity of bid prices required by section 3710 of the Revised Statutes. Officials of both the Bethlehem and Continental Steel Companies have testified to a Congressional Committee that published prices of steel were often secretly reduced to meet competition in private transactions. Nevertheless, the Government paid the official prices published in trade journals because of its open price practices.[5] A study conducted by the National Association of Purchasing Agents showed that 96% of private Purchasing Agents regard price quotations and prices paid as entirely confidential, and that they consider such practice essential in order to receive the best treatment from suppliers.

An economy geared to total war reflects absolute shortages of materials and labor as well as apparent shortages due to maladjustments and dislocation of industry. Procurement policies, considerate of geographical distribution of orders, spreading of business and utilization of existing plant capacity are equally important under a peacetime economy. Proper evaluation of nonprice factors should also figure: in the long run it contributes to the securing of low prices. Speed of delivery is a variable element, for, normally most requirements can be determined sufficiently far in advance to permit delivery when needed. In drafting a contract, or purchase order, however, terms of delivery should not be overlooked. Due regard must be given to method (e.g., tailboard delivery, actual unloading, stacked delivery) and destination (e.g., construction job, consuming agency, warehouse) which affect service and price at once. In the case of truck delivery of ready-mixed concrete, for example, an average unloading time agreement with the supplier should embrace credits and penalties. Otherwise, unloading time charges and equipment use costs are improperly reflected in the purchase price.

At present, purchasing by negotiation is specially favored by controlled prices, raw materials allocation, and products rationing and

Procurement Division Form No. 818

Contract No. Tps

Req. No.

Group

TO: UNITED STATES TREASURY DEPARTMENT, PROCUREMENT DIVISION
7TH AND D STREETS S.W., WASHINGTON, D. C.

The undersigned offers to furnish, at the prices stated, the following:

DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE

If in excess of $10,000 execute form on reverse side.

DELIVERY:

Discount: percent calendar days.

This offer includes the "Procurement Division Contract Terms," No. , dated , on file with the Director of Procurement, a copy of which has been received by the undersigned.

The contractor certifies that the price or prices quoted herein for the articles or services to be furnished hereunder are not in excess of any existing applicable maximum prices established by the Office of Price Administration.

Name of Firm or Individual and Address

By
Signature and Title

Date

ACCEPTED BY THE GOVERNMENT

Name

Title

Date

(38635)

[5]Hearings Before the Temporary National Economic Committee, Part 19, pp. 10596 ff.

The Procurement Division's revised contract form is a highly simplified document combining the vendor's bid and the Government's acceptance. Standard contract terms and conditions are included by reference on the face of the contract, eliminating the necessity of the more elaborate form previously used. On contracts in excess of $10,000, the vendor is required to list the name and location of plants at which the material is to be manufactured.

similar regulatory devices. Nonprice factors are evaluated in large part by war policy agencies: War Production Board, Office of Price Administration, War Manpower Commission, Office of Defense Transportation.[6] It is just possible that these conditions predetermine effective use of negotiation in Federal procurement. A challenging point of view holds that the advantages of negotiation to the entire nation would probably be greater in periods of relatively low economic activity.

A Continuing Problem

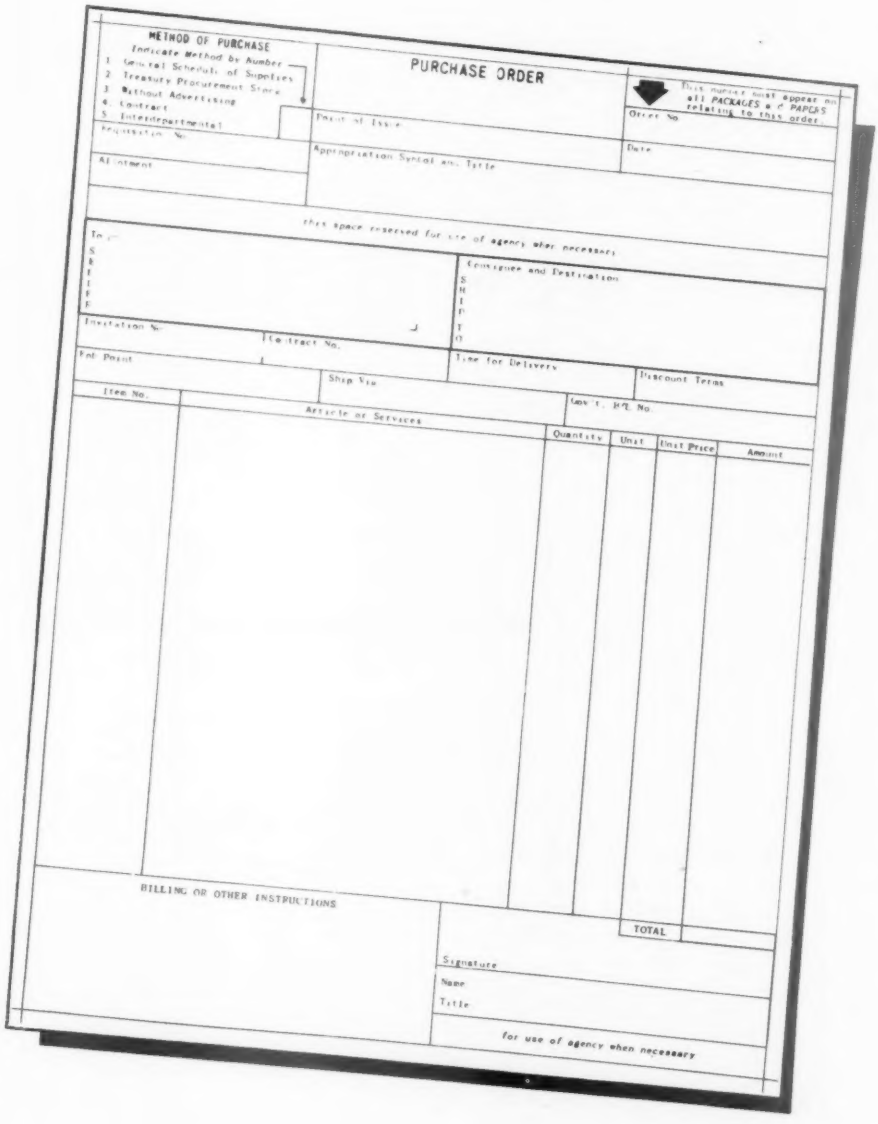
Government officials and technical specialists are generally agreed that full employment and a high level of production and national income must be maintained after the cessation of hostilities. Postwar rehabilitation of impoverished areas abroad and the reconversion of domestic plants to the production of civilian goods indicate the need for continued direction and a measure of control of economic activities by the Government. In this connection, the extension of authority to negotiate Federal contracts appears inevitable. Reliance on the negotiation procedure, however, will necessitate regulations equivalent to those identified with formal procurement. Statutory law, as interpreted by decisions of the Comptroller General, specifies practically every step to be taken in the procurement process, postaudit by the General Accounting Office providing the enforcement authority. Discriminate negotiation of purchases, however, often serves Government interests better. On a few occasions purchasing officers, through negotiation, dissolved local fixed price structures on certain materials, where readvertising of bids failed.

Informal price quotations take the place of formal bids in negotiated purchasing. These should be carefully preaudited by the General Accounting Office through review of contracts before payment by regional representatives. In addition to postaudit by the General Accounting Office, it would be desirable for each procurement office to maintain an independent contract review board empowered to renegotiate contracts obviously working out to the disadvantage of the Government.

Procurement, whether by negotiation or formal procedure, must be based on a thorough knowledge of markets and commodities. By virtue of its realistic approach, negotiated purchasing tends to develop such knowledge. Placing Federal procurement on a par with commercial purchasing will eliminate red tape and stimulate competition among concerns interested in securing Government business. Administrative costs can be substantially reduced by eliminating the voluminous paper work of formal purchasing. Control over expenditure of public funds would be tightened, and price savings on supplies and materials consumed by the Government realized.

Federal procurement requires constant review. As an illustration, a recent analysis of purchase orders issued by Government agencies (exclusive of those for military items) showed that 82% represented 8% of the money total, 18% accounting for 92% of the total expenditures. About 3,000,000 purchase orders are issued by Federal agencies annually. Administrative cost for each purchase transaction, from inception through final audit by the General Accounting Office, varies as the size of the purchase. In collaboration with the Bureau of the Budget, the Procurement Division is currently determining the reason for a dis-

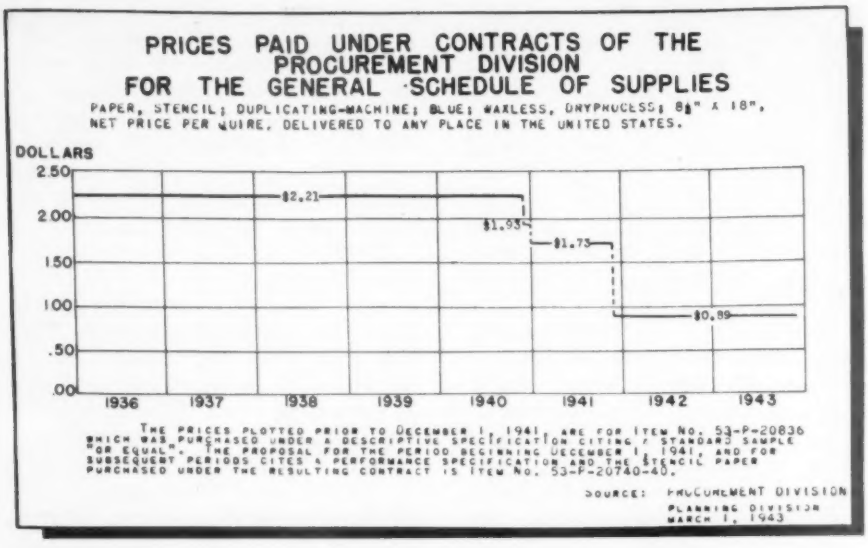
[6] Adequate appraisal of nonprice factors in Federal procurement must be related to the over-all impact of Government demand upon national economy. Standards, perhaps, should be developed by research agencies outside the field of procurement in order to check abuses arising in the absence of safeguards.

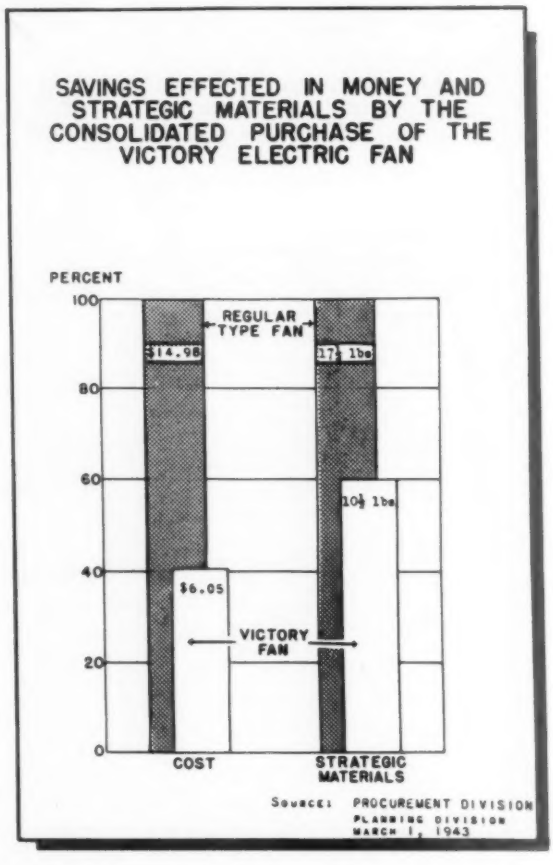

METHOD OF PURCHASE
Indicate Method by Number
1 General Schedule of Supplies
2 Treasury Procurement Store
3 Without Advertising
4 Contract
5 Interdepartmental

PURCHASE ORDER

Point of Issue
Requisition No.
Allotment
Appropriation Symbol and Title
Order No.
Date
This space reserved for use of agency when necessary
To
Consignee and Destination
Invitation No.
Contract No.
Time for Delivery
Discount Terms
Ship Via
Govt. B/L No.
Item No.
Article or Services
Quantity
Unit
Unit Price
Amount
BILLING OR OTHER INSTRUCTIONS
TOTAL
Signature
Name
Title
For use of agency when necessary

This standardized purchase order form has been prepared for use by all procurement offices throughout the Federal service, excepting the military agencies. Suppliers will no longer need to review each form to look for variance in the requirements when dealing with several different Governmental agencies. The Procurement Division is working toward the extension of this purchase order as the standard method of commitment, and toward the eventual elimination of a contract form except for other than standard purchases.


PRICES PAID UNDER CONTRACTS OF THE PROCUREMENT DIVISION FOR THE GENERAL SCHEDULE OF SUPPLIES
PAPER, STENCIL; DUPLICATING-MACHINE; BLUE; WAXLESS, DRYPHOCESS; 8½" X 18", NET PRICE PER QUIRE, DELIVERED TO ANY PLACE IN THE UNITED STATES.
DOLLARS
2.50
2.00
1.50
1.00
.50
.00
$2.21
$1.93
$1.75
$0.89
1936
1937
1938
1939
1940
1941
1942
1943
THE PRICES PLOTTED PRIOR TO DECEMBER 1, 1941, ARE FOR ITEM NO. 53-P-20836 WHICH WAS PURCHASED UNDER A DESCRIPTIVE SPECIFICATION CITING A STANDARD SAMPLE FOR EQUAL". THE PROPOSAL FOR THE PERIOD BEGINNING DECEMBER 1, 1941, AND FOR SUBSEQUENT PERIODS CITES A PERFORMANCE SPECIFICATION AND THE STENCIL PAPER PURCHASED UNDER THE RESULTING CONTRACT IS ITEM NO. 53-P-20740-40.
SOURCE: PROCUREMENT DIVISION PLANNING DIVISION MARCH 1, 1943



proportionate amount of small purchases. Since management seems to be the answer, practices of agencies having, respectively, a small and large number of transactions, are being reviewed and compared in order to develop administrative controls.

Price offerings and quotations of suppliers cannot be appraised unless products offered are identical. On the other hand, without adequate specifications suppliers are unable to offer exactly what is desired. Federal Specifications now cover most items regularly procured by the Government, especially those purchased through the consolidation of requirements (e.g., items stocked by the Procurement Division or contracted for under the General Schedule of Supplies). No satisfactory specifications are available however, for many commodities still regularly purchased by each using agency directly. The purchasing officer merely describes what is wanted as best he can and advertises accordingly. Often failing to consult suppliers' representatives to find out what is available and how to describe it, as a last resort he may merely specify a particular trade or brand name in lieu of a specification, adding the words, "or equal" to meet the requirements of the General Accounting office.[7]

[7]The General Accounting Office forbids the purchase of proprietary products unless they are absolutely indispensable.

Continual revision of specifications, necessary even in normal times, has been emphasized during the past year. Restricted or prohibited use of critical raw materials in the fabrication of supplies for nonwar agencies has affected trade practices. Under the stress of war, materials, products and processes have undergone variable changes. In normal times, as a result of adequate sources of supply, specifications tend to become set. Thinking in terms of substitute materials and revised specifications to cover is strictly an emergency phenomenon. Yet such alternates may serve at least as well, and more cheaply, and stimulate competition besides.

Emergency Alternate Specifications need not be restricted to war. Special conditions, whenever arising, should be met by employing this device pending modification of regular Federal Specifications. In general, specifications should be oriented to performance rather than mere description. Similarly, postwar emphasis will be placed on (1) close conformity with commercial standards, and (2) more adequate definition of, and specifications for Government needs. The special manufacture of obsolete or extra-quality goods not customarily used outside of the Government will be eliminated. Attention will be directed to the objective determination of minimum needs, for if economies are to be realized by consolidating requirements, simplification of varieties and sizes formerly used in the Federal service must be extended.

Inspection Practice

Closly associated with specification is systematic inspection and test. In the absence of the latter, the Government may get less than it has contracted and paid for, while reputable suppliers stand to be undermined by unscrupulous dealers who practise passing off substandard merchandise. The volume and variety of "Victory grade" war purchases intensifies the need for control of standards. War supplies and equipment purchased in large quantities are carefully inspected by Army and Navy Experts. A number of agencies, including the Procurement Division, systematically check purchases of nonmilitary items. Items procured by larger agencies, or by consolidated purchase methods, are subjected to better inspection than the thousands of small items customarily purchased through retail outlets in nominal quantities. Unstandardized inspection encourages the neglect of systematic tests or check-ups. Often the size of the inspection staff, and mechanical facilities available, permit no more than random spot check. Improvements in technique and scope must be made in the postwar period to keep this phase of procurement abreast of other purchasing innovations. More extensive and systematic spot inspections at Federal warehouses and storerooms, and inspection during manufacture at plants of suppliers must supplant merely negative investigation of complaints.

Inevitable termination of a num-

Continued on page 268

MATERIAL CONTROL RECORD

For Purchasing Rated Materials

By W. J. BROOKMAN
The Miro-Flex Co., Wichita, Kansas

SMALL manufacturers and subcontractors producing war goods are found to be most careless in maintaining proper material control records.

Through the maze of orders and regulations affecting the small manufacturer who has diverted to war production, one space has been left vacant. He has not been furnished forms or suggestions as to how to properly keep records that will be acceptable when the W.P.B. representatives check on his material flow as allowed under his priority authorizations. This form or system he must work out for himself. And most small businesses are so busy trying to locate materials and keep up production, that this job is put to one side month after month, until some day a W.P.B. representative walks into his office and asks for records which he cannot produce and, therefore, cannot substantiate his use of materials or his request for further materials—a very embarassing position and likely to be a costly one.

The form developed by the writer for the Miro-Flex Company has met with much praise on the part of checkers from W.P.B. and Army Air Corps, and at their suggestion it is passed on herewith for what it may be worth, to assist other firms who operate under the P.R.P. and who will soon operate under C.M.P.

This material control record is maintained in the office of the purchasing agent, usually by the priorities director, for the purpose of having an up-to-date daily record of all materials purchased on P.R.P. ratings or materials purchased on PD1A ratings.

It is designed to do these things:

1. Set up a control sheet on each kind of material for which ratings were allowed by W.P.B. for the purchase of materials.
2. Set up a sheet for each different rating allowed on the same materials (necessary where there is more than one end use).
3. Keep accurate record of amount of material authorized to purchase and purchase orders issued against it.
4. A record that in an instant gives the amount of material out on orders, amount received that quarter, and amount left that can be ordered without exceeding amount authorized.
5. A record that can be easily be checked by W.P.B. representatives without upsetting your entire office.

In maintaining this system, the following routine is followed:

When each quarterly PD25A application is made up and filed, a sheet is headed for each material requested per Line 2 and the amount requested is written in red

Continued on page 270

① P.D 25A - 30,000 lbs.

② MATERIAL Carbon Steel ③ QUARTER First - 1943

④ TOTAL AUTHORIZED 24,000 lbs ⑤ RATING AA-1

⑥ SEE AA2X CARD FOR BALANCE AA4 ⑦ AMOUNT AUTHORIZED AT ABOVE 18,000 lbs

(IF ANY SPECIAL CERTIFICATION REQUIRED NOTE ATTACHED.)

ORDER DATE	ORDER NO.	WHO	RATING USED		AMOUNT ORDERED A	BALANCE AGAINST ORDER B	AMOUNT RECEIVED C	DAILY BAL. AGAINST REC. D
1/2/43	14762	Ryerson	AA-1	Cer No 1814	2000	16,000	2,000	16,000
1/6/43	14893	U.S. Steel	AA-1	"	1000	15,000		
1/9/43	14977	U.S. Steel	AA-1	"	2000	13,000		

Last figure in Column B shows the balance that can be ordered.

Last figure in Column D shows the balance after goods on order have been received.

To determine the amount on orders not yet received, subtract Column B from Column D.

Enter Columns A and B from purchase orders as issued daily.

Enter Columns C and D from invoices received daily. Use separate card headed for each different rating on same material.

UTILITY PURCHASING AGENTS Confer in Detroit

Two-day meeting brings interpretation of new orders from Office of War Utilities

WITH a record registration of more than two hundred Purchasing Agents representing public utilities from every section of the country, who taxed the capacity of the Statler's Michigan Room at each of the four sessions, the Utilities Section of the National Association of Purchasing Agents held its 1943 Midwinter Meeting in Detroit on April 5th and 6th.

The program for this conference, centering about the new U-1 order issued by the Office of War Utilities and the excess stock exchange plan which is calculated to ease the materials problem of the utility buyers, brought to Detroit a half dozen of the leading executive and administrative officers of OWU from Washington, to clarify and interpret the new orders and their application. Scores of specific questions, some prepared beforehand and some developed during the discussion from the floor, covering various aspects of the regulations as they affect purchasing policies and procedure, provided a framework for a comprehensive and practical presentation.

Among those participating were Edward Falck, Deputy Director of the Office of War Utilities; Barclay J. Sickler, Director of the Power Division, OWU; Paul B. Valle, Administrator of Utilities Order U-1, OWU; Charles F. Weiler, Chief of the Material Control Branch, OWU; Charles E. Kohlhepp, Chief of the Inventory Control Branch, OWU; and William Krebbs, Legal Counsel for the Power Branch, OWU.

U-1 and CMP

Fred A. Compton, Purchasing Agent of The Detroit Edison Company, and Chairman of the N.A.P.A. Utilities Section, presided at the opening session on Monday morning, introducing Mr. Falck, who spoke on "The Organization and Basic Policies of the Office of War Utilities."

Russell Wenz of the Philadelphia Company, Pittsburgh, presided at the Monday afternoon session. The speakers were Mr. Sickler and Mr. Valle, who discussed "The New U-1 order." Cutting through the legal phraseology of the new regulation, from which most of the present ambiguities and questions arise, Mr. Valle explained that it is essentially the old P-46 order with the addition of CMP procedures to bring the utilities generally in line with the Controlled Materials Plan as applied to all industry, and with the further addition of the sections on inventory regulations. It is designed as a means of getting the materials for maintenance, operation and repair so as to assure continuity of utilities services with the least use of critical materials. In this respect, the speaker declared, the utilities industry is in a particularly favorable position at the "top of the heap," ranking right next to direct Army and Navy orders in preference ratings. The regulation further serves to set maintenance standards for the industry, stimulates the redistribution of inventory, putting available equipment and supplies into immediate service where they are most urgently needed, and provides basic records to guide the Utilities Section in estimating utility requirements.

Chairman Wenz provided an innovation at this session by setting aside fifteen minutes as a "Grouch Period" during which the members were invited to air their criticisms and troubles. Among the opinions expressed were the following:

That utility company inventories are not truly comparable with those in manufacturing industry, since they contain many items of spare parts on which turnover is exceedingly slow, giving the unwarranted impression that excessive inventories are maintained; and that this impression is strengthened by the fact that most utilities keep more complete inventory records than are customary or necessary in manufacturing operations.

That there is no need for two certifications under U-1.

That too much red tape is involved in procuring small amounts of material.

That one standard form of approval should be used for the various types of applications, and that a blanket form of approval should be issued for the installation of temporary services.

Harry Scott of the Union Electric Company of Missouri, St. Louis, presided at the Tuesday morning session. Speaker at this meeting was Mr. Weiler, who discussed "The Controlled Materials Plan As It Affects Utilities."

Excess Stock Exchange

E. R. Mitchell of the Cincinnati Gas & Electric Company presided at the Tuesday afternoon meeting, where Mr. Kohlhepp spoke on "Functioning of the New Utilities Excess Stock Exchange Program." Mr. Kohlhepp bespoke the cooperation of all utility Purchasing Agents, who are now placed in the dual position of buyers and sellers, in the redistribution of materials and equipment to implement both the utilities operations and some of the more urgent needs of military manufacturing. It is his contention that a clear understanding of what the plan is intended to accomplish, and working whole-heartedly toward that end, will make it unnecessary to impose more detailed regulations. OWU is not in favor of writing any more rules unless they are definitely needed. They believe that Purchasing Agents know values. But if the plan results in offerings of over-age equipment at undepreciated valuations, or similar exhibitions of opportunism contrary to the spirit and intent of the plan, it may become necessary to devise elaborate reporting, inspection and valuation procedures and to "turn the heat" on offenders. The plan will succeed only to the extent that buyers play the game. On the other hand, OWU is inclined to play the game with common sense interpretations and reasonable administration of the present somewhat general principles outlined in the order.

METHODS OF ANALYSIS TO DETERMINE THE CORRECT PURCHASE PRICE

By

JOHN H. HARWOOD

THE concept of price as a regulator, which automatically brings into equilibrium the forces of supply and demand, is obviously inadequate unless it is qualified in several important respects. Reasonably free competition, a reasonable degree of mobility of capital and labor, and a price structure free from excessive controls—all are necesary conditions if price is to exercise its regulatory function directly. The fact that these requisites are not always present in our economy, and, therefore, that prices often do not represent a balancing of supply and demand, suggests the advisability of maintaining a questioning attitude toward the prices at which goods are offered for sale.

The Purchasing Agent, however, must extend his efforts beyond the mere maintenance of a questioning attitude; it is his duty to analyze prices with sufficient thoroughness to prevent his organization from purchasing at prices which are above a fair and reasonable level. L. R. Watkins has defined this function of the purchasing agent as follows: "When we speak of analyzing prices we really mean that we are trying to determine as far as possible the value units going to make up a fair selling price and a reasonable buying price; in other words, the component parts of value equivalent."

But what constitutes "a fair selling price and a reasonable buying price?" Gushee and Boffey have defined it as "one which represents a fair profit on the cost of economical production and distribution of the goods." The word "economical" is the key to this definition; for it is particularly important that the buyer should not support inefficient methods on the part of the seller.

No objection is likely to be raised to the statement that the buyer should not pay a price which is *above* a fair and reasonable level; but should he also be concerned with asuring the vendor a fair profit? If the purchase is small and there is no apparent need to worry about the availability of satisfactory future sources of supply, the buyer generally need not be concerned with the vendor's financial welfare. Under certain conditions, however, protection of the supplier's fair profit margin is an important and necessary consideration. If the buyer is purchasing a large part of the supplier's output, so that his actions will have a determining effect upon the supplier's total net profit; and if in addition, the buyer wishes to maintain continuing relations with this supplier in the future, then it is to the buyer's advantage to see that the supplier continues to remain in business. In such a case, the buyer should be concerned with paying not only no more than a fair price, but also no less than a fair price.

As aids to the Purchasing Agent in determining the proper price to pay in any situation, various methods of price analysis are available. It is the purpose of this paper to discuss these methods and to indicate their applications. It will be recognized, of course, that the degree to which the use of price analysis methods is justified in any case will depend upon the importance of the commodity to the buyer's company and also upon the size and completeness of the purchasing department.

The type of analysis which is undertaken will vary roughly according to the manner in which the purchaser obtains price information on the particular commodity. From this point of view, commodities may be classified as follows:

(1) Commodities subject to market movement.
(2) Commodities sold on list and discount.
(3) Commodities sold only on quoted price.

Commodities Subject to Market Movements

The commodities for which frequent market quotations are available consist mainly of raw materials, either in their original state or after having been refined or treated. The problem of greatest importance in the purchase of commodities in this class is the proper timing of purchases to secure the greatest possible advantage from market movements.

Dates	Labor Index	Commodity Index	Materials			Quoted Price	Purchased From
			"A"	"B"			
(Present)	70		.06	.32		.95	
(Past)	40		.03	.20		.75	Co. X.

Figure 1→

Price *trends*, in other words, are more important than the price at any given time. Once the best time to purchase has been determined, there is nothing that can be done by the buyer toward obtaining a price different from the current market quotation.

For commodities with well established markets, price quotations and other items of market information are ordinarily available in such publications as trade papers, financial publications, and daily newspapers. Contacts with vendors' representatives furnish another important source of price information in the form of advance "tips" regarding changes in prices or in concessions offered.

The buyer, however, not only needs price information, but must also have supplementary knowledge concerning all of the factors which may influence price, to guide him in interpreting market fluctuations and in solving the problem of timing his purchases correctly. A knowledge of the following factors is of importance to the purchaser of any sensitive commodity:

(1) Technical problems of the industry which produces the commodity.
(2) Economic problems of the industry.
(3) Financial conditions in the industry.
(4) Location and extent of the supply of the commodity.
(5) Uses and applications of the commodity.
(6) Production, consumption, stocks, imports and exports.
(7) Marketing methods.
(8) Actual and probable governmental activity which may affect price.
(9) General business conditions.

This may seem to be too much extensive a list of facts for the buyer to master; but by means of delegated research work, reading in current trade periodicals and newspapers, contacts with purchasing executives and with other businessmen, and contacts with vendors or with sales representatives, the buyer should be able to build up and maintain an adequate fund of information. The application of this knowledge to the problems of timing purchases is a study in itself and is not within the scope of this paper.

One important and well-known aspect of price forecasting, however, deserves mention at this point. Changes in the price of a raw material often precede similar but less violent changes in the price of the same material in the processed or treated state; hence a knowledge of the price characteristics of the original material is valuable to the purchaser of the processed material. Such a price relationship, however, cannot be relied upon by itself, but must be considered in conjunction with other factors which might disturb the relationship, as for example, governmental action or technological changes in the industry.

In the case of raw materials for which there is no well-defined market, a guide to the proper price to pay may possibly be found in the quoted market price of some related commodity or in the Bureau of Labor Statistics index of wholesale commodity prices. This index number may be charted along with a graph of prices paid for the material; and any divergence or convergence of the differential between the two lines over a period of time should be explainable in terms of some factor which affects only one of the two measures. If there appears to be no such explanation, the buyer may well question the fairness of the price paid.

Commodities Sold on List and Discount

The second class of commodities consists of such products as mill supply, hardware, and other standard production items. The prices are usually well publicized through vendors' catalogues and discount sheets. A record of past prices paid should be kept as an additional source of price information. Although prices of commodities in this class are relatively stable, the buyer should not base his purchases entirely upon published prices. For any purchases of importance, contacts with vendors should be made, either through their salesmen or by means of requests for quotations, in order to obtain current information as to prices and concessions offered.

In the event that a commodity in this class is of major importance to a company in terms of the value purchased, a study of the factors which enter into the price of the item may be warranted. In taking such action, quoted prices may be regarded as one index of the value of the product, but are not considered to represent a fair price unless the independent investigation supports such a conclusion. A case in which such an investigation yielded worth while results is cited by L. R. Watkins:

"Some time ago it seemed to us that we used enough lead pencils to warrant a real investigation of what materials are used in their manufacture, their respective costs, the labor conditions in the pencil industry, and the marketing methods followed. We found willing cooperation on the part of manufacturers, and, when our data were complete, learned some surprising things concerning the real value equivalent of lead pencils. By employing the knowledge thus gained we bought our requirements at a price more in line with actual cost conditions and have continued to do so."

Since investigations of this type are ordinarily confined to products in the third class of commodities, the methods involved will be discussed more fully in the following sections of this paper.

Commodities Sold Only on Quoted Price

The third class of commodities includes such products as special tools, forgings, castings, and other special parts. It is in purchasing such products that the buyer's problem of obtaining the proper price becomes most acute; for there are no quoted market prices to serve as guides, nor are there any published prices in the form of catalogues and discount sheets. The available methods of arriving at a fair purchase price include: (1) the solicitation of competitive bids; (2) the comparison of purchase prices with various index numbers; (3) the study of cost items which enter into the manufacture of the product; and (4) various combinations of these methods.

The Value of Bids in Price Analysis

It is obviously true that the solicitation and comparison of bids from a number of potential sources of supply will not always yield a fair price for the article in question. For example, collusion may occur in some cases; but even if there are differences in the quoted prices received, the lowest quotation may still be above what we have previously defined as a fair level.

A commonly used but by no means infallible method of checking the fairness of quotations is to solicit bids from sources other than those on the company's approved list of bidders, with the intention of using such bids merely as a check against the prices quoted by the potential suppliers. This practice increases the probability that one of the bids received will represent a fair price; but it must be recognized that the

suppliers whose bids are requested for checking purposes will not ordinarily prepare their quotations as carefully as will the potential suppliers. The method, therefore, does not necessarily provide a complete and accurate check; and in most cases it is advisable for the buyer to make some further investigation so that he will have a definite idea as to what constitutes a fair price for the product in question.

It is not always practicable, however, to use the more involved methods of price analysis as guides when purchasing is done on the basis of bids. Relatively complex items of machinery and equipment which are being purchased for the first time, for example, are difficult to analyze in terms of costs, since the price often includes an indeterminate amount of development expense. Furthermore, in such cases it is frequently true that the products offered by the various bidders differ materially from one another, so that in order to obtain value commensurate with the price paid, the buyer must depend, first, upon careful selection of bidders and second upon careful analysis of each bidder's product in terms of the performance required of the equipment. It is primarily to purchases of less complex products therefore, that the following suggestions are applicable.

The Use of Cost Data in Price Analysis

The best approach to the determination of the correct purchase price is to supplement the quoted prices with comparative cost figures for the product in question. If the buyer is provided with a record of prices at which the article has been purchased in the past, accompanied by a record of past and present prices of various elements which enter into the cost of the purchased product, he will have some basis on which to make an intelligent decision as to whether or not the changes in quoted prices from one period to the next are justified in terms of changes in the vendor's costs.

It will be noted that the procedure suggested is one of comparison; it does not enable the buyer to determine whether a price as such is fair, but only whether it is fair in relation to previous prices paid for the same product. Presumably there may be situations in which the buyer began to purchase an article at an unreasonably high price and has continued to do so over a long period of time. Comparison would be of no value in determining a fair price in such a case, although of course it would indicate any tendency for the price to become still more unreasonable.

The buyer who suspects that such a situation exists, or who is purchasing an item for the first time and thus has no past price data to use, may have access to one or more of the following sources of information which might serve as guides to the determination of a fair price:

(1) Thoroughness in the use of competitive bidding has already been suggested as a partial check which will reveal unnecessarily high prices in some instances.

(2) The buyer may be able to obtain bits of information at different times from various suppliers or their representatives. By piecing together and comparing the evidence so compiled, some indications may be obtained as to the costs actually involved in the product.

(3) The buyer or his inspectors may obtain or be able to deduce cost information through their visits to the supplier's factory.

(4) If the buyer's company has had any experience in manufacturing the product in question or one closely allied to it, information as to costs will already be at hand.

(5) The purchasing company's plant engineering department, or its master mechanic, may be able to make a reasonably accurate cost estimate from the drawing of the product, depending upon the nature of the item and upon the experience of the individuals called upon to make the estimate.

(6) If the supplier is friendly and co-operative, it may be possible to obtain information

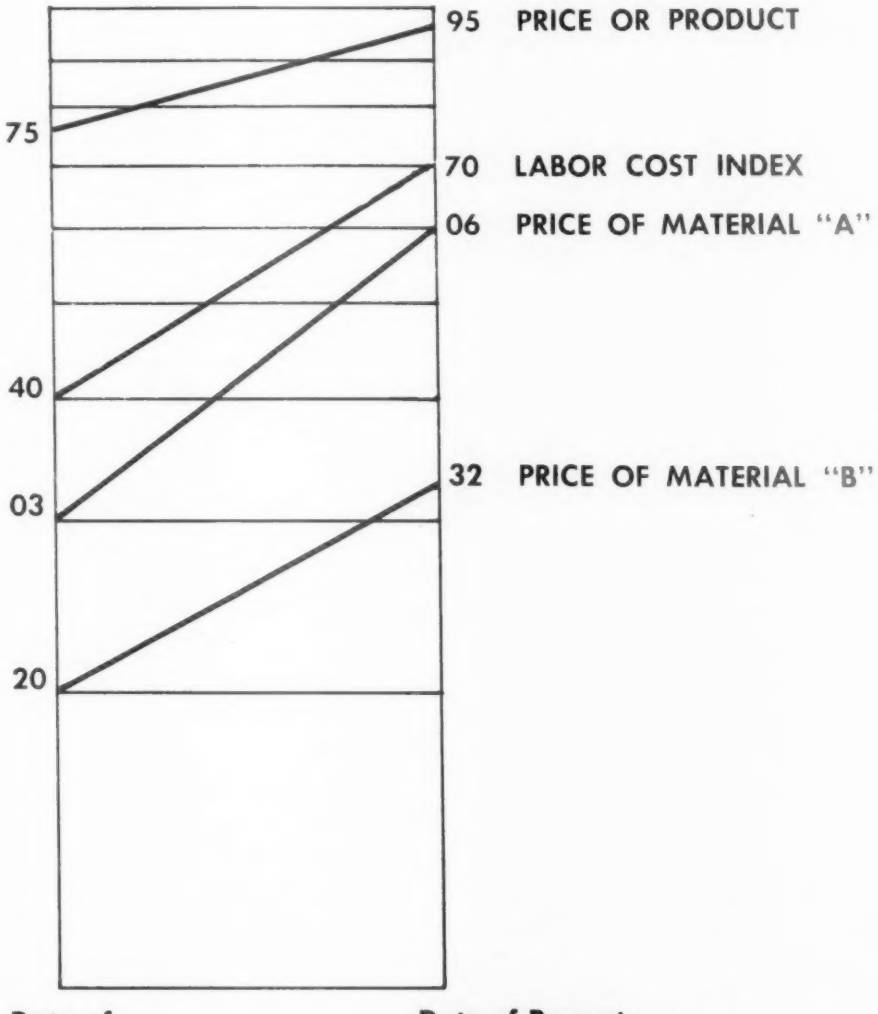


Figure 2→

concerning his costs merely by asking for it. A supplier who had obtained an unnecessarily high price for some time, however, probably would not accede to such a request; but the idea has possibilities as a preventive measure.

(7) It may be possible to obtain some useful cost information from the supplier's annual financial statements. In most cases, however, the information given in such statements is not sufficiently detailed to be of any great value.

The attempt should be, of course, to arrive at a reasonable price at the time of the initial purchase and then to insure its continued fairness by means of comparison procedures.

There are a number of techniques which can be used to put comparative cost data into usable form; some of the most useful of such devices will be discussed below.

Methods of Comparing Costs and Prices

Many companies use what is known as a "quotation summary sheet," which is a convenient form on which to record the essential facts concerning all of the quotations received for any purchase which is being contemplated. The usefulness of such a summary sheet may be increased by including on it a section in which to record comparative cost data. A suggested form for this section of the summary sheet is shown in Figure 1. Columns are provided in which to record past and present values of an index of labor prices, a general commodity price index, and prices of the more important materials of which the product is composed. Columns which show previous purchase prices and the companies from which purchases were made are also included.

The inclusion of an index of general commodity prices in this tabulation deserves comment at this point. Such an index may or may not be of value as an indicator of price trends, depending upon the product which is being analyzed. In some cases it may be a valuable guide to the buyer in deciding whether price changes are justified. It does not, of course, give any direct indication of changes in the costs involved in the product; its usefulness is rather in suggesting to the buyer the advisability of making some further investigation of those costs. It may happen, however, that the product in question cannot be analyzed in terms of component materials for which quoted market prices are available, in which case a general index of commodity prices may be the best available indicator of the changes in the costs of the materials involved.

The suggested tabulation considers only labor and materials; but the price paid also includes the vendor's overhead and profit, which are ordinarily unknown to the buyer. Therefore, since only a portion of the price is being analyzed, some assumption must be made as to what constitutes a justifiable relationship between the entire price and these unknown elements. It would seem reasonable to assume that both profit and overhead should remain approximately uniform percentages of the price, although as a matter of fact, the behavior of overhead will vary somewhat, depending upon such things as the vendor's depreciation policy, the basis on which he allocates overhead to production, and the composition of his overhead costs. In spite of these causes of variation, the assumption that both profit and overhead should remain fairly constant proportions of the price is reasonably sound for price analysis purposes.

Charting the Information

With this assumption in mind, an added refinement to the above tabulation might be made in the form of figures to indicate the percentage change in each of the cost elements from some past date to the present. These figures could then be compared with the percentage change in the price of the product. If a continuous record over a long period of time is desired, the purchase price of the product and the values of the various cost elements to be considered may be charted on a semi-logarithmic scale. Absolute distances on such a chart represent percentage changes in the charted values, so comparisons can be made quite easily. In the specimen chart shown as Figure 2, the values used are taken from the tabulation shown on Figure 1.

This chart reveals much that cannot be determined by observation of the data in tabulated form. It can be seen immediately, for example, that the price of material "A" has increased by the greatest percentage, since its price line has the greatest slope. Material "B" has risen in price by practically the same percentage as has the price of labor, since the lines for these two factors are almost parallel. The price of the product has increased by a smaller percentage than has any one of the cost factors; hence it would appear that the price increase is more than justified on the basis of increased costs to the vendor.

Allowance for Variables

Such a situation may easily occur if the vendor has purchased his materials at a price lower than the current market. Obviously, the reverse is also a possible occurrence; i.e., the vendor may base his price quotation on materials priced higher than the current market. In other words, the results of this type of analysis cannot be considered to be conclusive in themselves, but must be judged in the light of the vendor's purchasing and inventory valuation policies for the materials in question. In the above example, if conditions warrant protection of the financial welfare of the source of supply, the buyer might well inquire as to the reason for the vendor's ability to quote a price which is apparently low in relation to present costs.

Some knowledge of the composition of the vendor's overhead costs (i.e., the relative importance of indirect labor, indirect materials, and other expenses as elements of overhead) is of material value to the buyer in making an analysis of this type, especially if overhead is an important part of the price of the product in question. If, for example, overhead consists primarily of indirect labor, changes in the price of the product may be expected to parallel changes in the price of labor more closely than if overhead is composed mainly of the costs of supplies and other indirect materials. If, on the other hand, supplies are the most important part of the vendor's overhead costs, this fact may tend to cause the price of the product to follow the general level of commodity prices. An experienced buyer may be able to reach a reasonably sound conclusion on this matter as a result of visits to factories or on the basis of his knowledge of conditions and methods in the vendor's industry.

A Single Index of Several Cost Elements

It will be noted that the analysis procedures suggested so far will yield only a general picture of changes in values. There is no indication given, in the above example, as to the relative importance of the various factors in the cost of the finished product; and because of the large number of variables involved, such an analysis may become

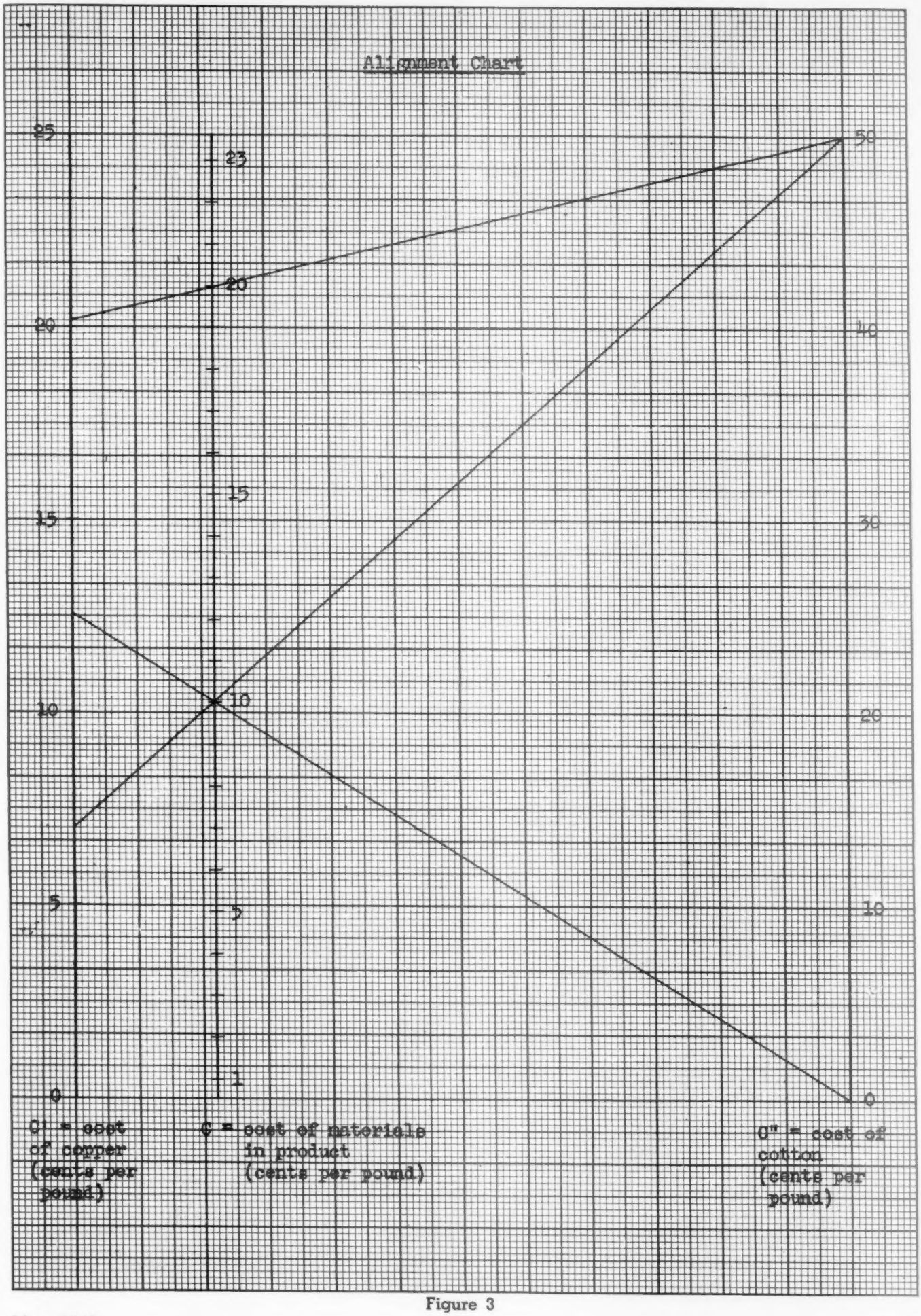

Alignment Chart
25
23
20
20
15
15
10
10
5
5
0
1
50
40
30
20
10
0
C' = cost of copper (cents per pound)
C = cost of materials in product (cents per pound)
C" = cost of cotton (cents per pound)

Figure 3

extremely complicated. The buyer must use careful judgment in deciding whether a given price change is a reasonable reflection of the combined movements of all of the cost elements which have been tabulated or charted separately. In order to obtain a more direct comparison, it is often advisable to combine all of the known elements of cost into one index which will indicate immediately whether or not price changes are reflected in cost changes.

The determination of the amounts of each material in a unit of the finished product is ordinarily not a difficult task; a chemical or physical analysis can readily be made in most cases. If labor cost is reasonably stable or is a relatively unimportant part of the total cost of the product, the buyer may desire to confine his price analysis to materials alone. The materials cost per pound or per unit of product may then be determined as in the following example:

Suppose that a physical analysis shows that a certain type of wire is made up of the following materials:

Copper, 75.9 per cent by weight.
Cotton, 8.4 per cent by weight.
Insulating Compound, 15.7 per cent by weight.

Now let

C' = Cost of copper per pound
C'' = Cost of cotton per pound
C''' = Cost of insulating compound per pound

Then the materials cost per pound of wire is stated by the following equation:

$$C = .759\ C' + .084\ C'' + .157\ C'''$$

The resulting single figure may be charted and compared with the price of the product. There is no need for the buyer to weigh in his mind the relative importance of changes in the costs of several materials, since their effects have been combined in proportion to the importance of each.

The Alignment Chart

If only two materials are involved, it is possible to construct a nomograph, or alignment chart, from which solutions to the foregoing equation can be read directly for any given set of values of the variables. Even if the product is composed of more than two materials, it may be that only two of them are of great importance as determiners of the materials cost, and hence that the cost of the remaining materials can be neglected or considered to be constant. In the above example, for instance, the pound price of insulating compound is very low and relatively stable; and in addition, the percentage of compound in the product is small. These facts suggest the advisability of treating this element as a constant in order to gain the advantages of using the alignment chart.

In order to illustrate the procedure, the construction of a nomograph for the above equation is shown in Figure 3.

Construction of the Alignment Chart

(1) Assuming that the cost of insulating compound is constant at 3 cents per pound, the cost equation becomes: $C = .759\ C' + .084\ C'' + .471$.

(2) Estimate the maximum price that each of the materials can be expected to command. Let us assume that this figure is 25 cents per pound for C' (Copper) and 50 cents per pound for C'' (Cotton).

(3) Draw vertical lines of convenient lengths on opposite sides of a sheet of cross-section paper; mark on one line the scale of prices of copper (from 0 to 25), and on the other line the scale of prices for cotton (from 0 to 50). The modulus chosen need not be the same for both scales.

(4) The next problem is to locate the scale for C with relation to the scales for the two variables, C' and C''. Select two sets of values of C' and C'' which yield *one* convenient solution to the equation. This solution may be any representative value of C. For maximum accuracy, one set of values should consist of a high value for C' and a low figure for C'', and the second set should be just the opposite. The selection is made somewhat as follows:

Let 10 cents, a representative value of C, be the chosen solution. Now choose a low value for C'': zero will do. Substituting these two values in the equation, we find the resulting value of C' to be 12.55.

Again use 10 cents as the chosen value of C. This time, choose a high value of C'': 50 is satisfactory. Substituting these two values in the equation, we find that in this case, $C' = 7.02$.

We now have the following information:

C	C′	C″
10	12.55	0
10	7.02	50

(5) Locate these two sets of values for C' and C'' on their respective scales. Draw a line connecting the higher value of C' with the lower value of C'' and a line connecting the lower value of C' with the higher value of C''. The point of intersection of these two lines locates the scale for C and value of 10 cents on that scale. Draw a vertical line through this intersection to represent the C scale.

(6) In order to determine the scale modulus for C, choose another convenient value of C, such as 20 cents, and obtain a set of values of C' and C'' which will yield 20 as the solution to the equation. The values $C' = 20.2$ and $C'' = 50$, for example, satisfy this condition. Locate these two points and connect them with a line. The intersection of this line with the C scale is the 20 cent point on the C scale. The entire scale may now be marked with convenient values of C, since the distance between 10 cents and 20 cents may be measured to determine the modulus.

(7) To use the chart, connect the cost of copper (C') with the cost of cotton (C'') by means of a straight-edge, and read the materials cost of the product at the point where the straight-edge intersects the C scale.

The Inclusion of Labor Cost in a Single Index

If the cost of labor is an important part of the price of an article and if labor costs in the suppliers' industry are fluctuating, the buyer may find it advantageous to include the labor cost element in his price analysis index in order to increase the accuracy with which this index will reflect changes in the vendor's costs.

In order to accomplish this combination of materials and labor into a single index, it is necessary to know something about the relative importance of the two factors in the supplier's costs, so that they may be properly weighted Assuming that it is impossible to obtain this informa-

Continued on page 262

This paper received a $100 award from the Boffey Memorial Fund in the 1942 Students' Educational Contest sponsored by the National Association of Purchasing Agents. Mr. Harwood is a student at the School of Business Administration, University of Michigan.

This system of Glassteel diffusers provides a uniform level of high quality lighting in this stockroom.

Fluorescent stock bin units can double the present lighting from existing wiring.

STOCKROOM LIGHTING

By

DEAN M. WARREN

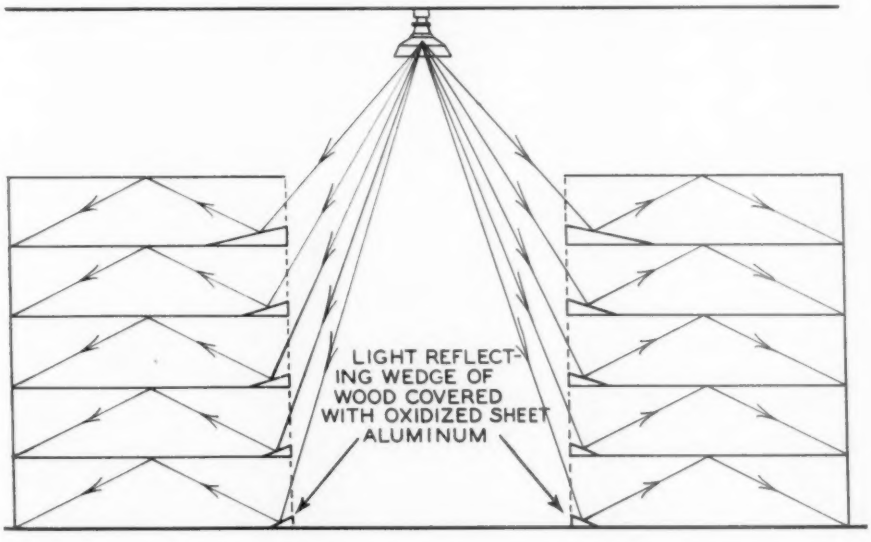
THE general stockroom area requires a system of good overhead lighting to facilitate the handling of materials. The lighting should be uniform which requires that the units be properly spaced with respect to their mounting height. In general, a spacing in feet which does not substantially exceed the mounting height will result in reasonably uniform illumination.

Either the RLM Standard Dome reflector or the Glassteel Diffuser, both of which are standardized products of a large number of manufacturers, can be used. The Glassteel unit is fitted with an opal glass diffusing globe which completely encloses the lamp and diffuses the light, hence a higher quality of illumination is provided than that obtained from an RLM installation.

The circuit arrangement for the lighting should be such that flexible control is provided. Also, the wiring should be of such capacity that it will stand additional load without excessive voltage drop.

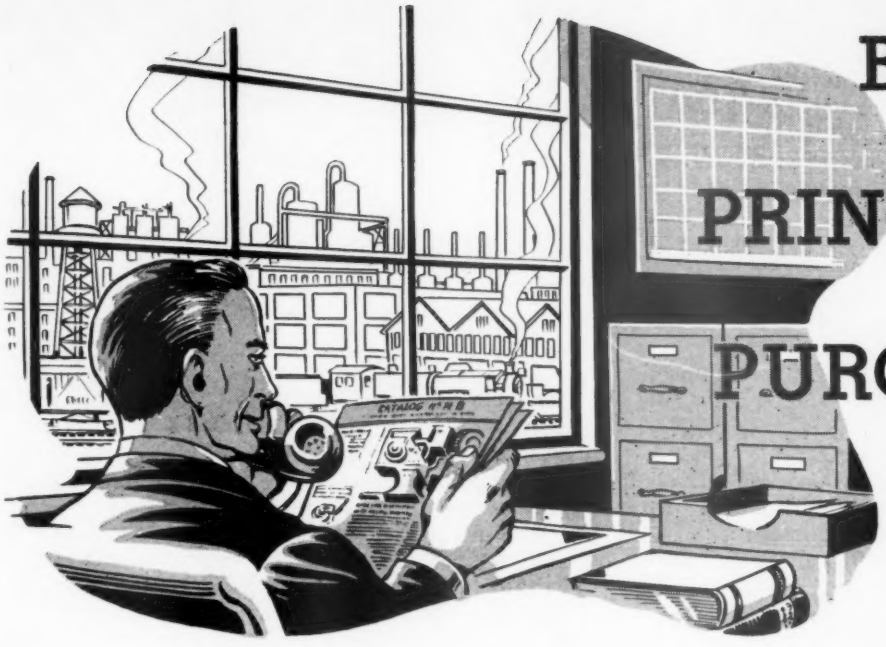
The lighting of the stock bins involves two problems. First, the control of the light by means of reflectors so that the lower bins will receive ample illumination, and second, the shielding of the light source so that the glare of the lamp will not tend to blind anyone walking down the aisles. There are a number of units designed for this specific type of lighting. One group uses the incandescent filament lamp and the other utilizes the fluorescent lamps. Both do an excellent job of lighting vertical surfaces. In instances where needed lighting improvement is held up because of inadequate wiring, the fluorescent sys-

Continued on page 254



Light from overhead sources can be directed to the back of deep stock bins by the use of light-reflecting paints on the interior surfaces.

"Oh, so it's you and your damn bells again!"



BASIC PRINCIPLES of PURCHASING

IV. QUANTITY FACTORS IN BUYING

THE question of what materials—and how much of each—to buy over any given period of time, is basically determined by the schedule and requirements of the company. Purchases are not made for the sake of purchasing, but to meet a specific need. To purchase less obviously means that the operating program can not be completely carried out; to purchase more means excessive expenditures for idle or unused materials, and consequent loss, unless and to the extent that the surplus quantities may be utilized in a later period.

That need can of course be calculated as represented by the totals of all the various requisitions that come to the purchasing department. But to rely upon information thus acquired from day to day is neither a practicable nor economical method, for it puts the entire procurement program on a basis of immediate need and gives no opportunity for the exercise of purchasing judgment or the formulation of a purchasing policy and program.

Quantity is Flexible

As a practical matter of industrial management, no such arbitrary limitations are imposed upon the purchasing officer, except in the case of a unique and non-repetitive project or special requirement. In any continuing business, the cycle of operations and material requirements is not so strictly defined by calendar periods, though the time divisions are observed for purposes of scheduling and accounting. Unless there is a definite reason to the contrary, it is reasonable to assume that the same sort of materials will be used in the succeeding period. On such items of standard use, therefore, the risk in buying quantities greater than those required for actual current use within a stated period is rather concerned with extended carrying costs than with absolute loss through obsolescence. And on the other hand, there may be very substantial purchasing advantages incident to forward coverage, in the way of quantity differentials and market conditions.

Inventory stores, besides their function of insuring the continuity of operations, provide the highly desirable flexibility in regard to purchase quantities. Thus, while the total procurement program is actually fixed and limited by actual requirements, the practical purchasing problem resolves itself into the question of how much to purchase *at a time*.

Furthermore, with the advancement in the science of production, marketing and distribution, most requirements can be forecast with a high degree of accuracy. On products sold and built to special order, detailed bills of materials can be compiled in advance, and in fact they frequently originate in the purchasing department at the stage of estimating costs for the purpose of bidding. On products manufactured for a standard line, production schedules are customarily set for a month to three months in advance, or even for an entire season or year—subject, of course, to revision up or down as conditions may change—upon the basis of well-founded estimates of demand, calculations of sales quotas, and taking into consideration such factors as seasonal variations as well as the long term trend and the quantitative relation between various items in the line. A common policy is to set up a tentative schedule for three months in advance, with a definite schedule for the current month, and to revise this on a monthly basis, so that there is at all times a reasonably clear view ahead without the risk of carrying on a manufacturing program or of making purchase commitments that are seriously out of line with expected requirements. The inventory of finished goods, and the policy of manufacturing for stock out of which distribution will later be made, add another element of flexibility to the program.

On such items as tools and operating supplies which do not enter directly into the manufactured product, the record of past consumption is a practical and reliable guide, when correlated with the rate of operations and output.

It is apparent, then, that two points of information

are essential in quantitative planning of the procurement program most effectively. One of these is the purchasing department's familiarity with the company's proposed manufacturing or operating schedule, as far in advance as this schedule may be projected. This is a matter of interdepartmental cooperation and conference. All phases of management are very closely interrelated in the modern complex industrial organization, and all are working to the same end of efficient and profitable operation. Only the argument of obvious common sense should be required to establish the advisability of including the procurement executive in planning councils. Frequently, due to his intimate contact with materials and markets, he is in a position to make a highly constructive contribution to such planning—particularly in times of material shortages when the operating program may primarily depend on what and how much is available. But even in those cases where purchasing may be considered as primarily or exclusively a service function to implement the production schedule, that very service is hampered and kept from achieving its maximum effectiveness if such information is not given promptly and completely to the purchasing department.

The second matter of essential information is the record of previous experience in respect to the usage of materials and supplies. This is a responsibility wholly within the purchasing department itself, to maintain its records not only accurately, but in a form capable of quick and intelligent reference and interpretation, and covering the disbursement of supplies as well as their procurement. And this responsibility for records applies just as forcefully whether the direct responsibility for handling stores comes within the jurisdiction of the purchasing department or is carried on as a separate function of the business.

One Order or Many

Having the picture of total purchase requirements over a given period in advance, the first decision which the purchasing executive must make is the choice between contracting for all or a major share of this total quantity with one or two suppliers, to be ordered out against the contract as required, or to plan his procurement in a series of separate purchase orders, each of which is a complete and independent transaction in itself.

The contract method has a number of advantages, particularly on major items of regular and continuing use. It permits the weight of the entire quantity to be used as a negotiating factor, known as "purchasing power," much more significant and attractive to the potential supplier than the fractional part of these requirements that would be represented in a single purchase order. It permits the supplier in turn to plan his own production schedule and make his purchase commitments more favorably. It provides a continuity and assurance of supply, uniformity of product, and an understanding of the company's special needs both as to product and procedure. It helps to establish sound and intimate business relationships.

It also reduces the work of purchasing by having one negotiation and decision do the work of several which would otherwise be required to procure the same quantity. It is particularly advantageous in this latter respect when the contract period or termination dates can be staggered in an orderly manner so that all contracts do not come up for renewal or reconsideration at the same time. It is also especially useful and time-saving on products involving several stages of fabrication—as, for example, on textile items which can be made up in the gray, and then dyed according to finishing and shipping instructions to match unpredictable style trends or color requirements, or on roll goods to be slit to various widths, or containers to be delivered in varied assortments of sizes.

Contract Terms

Contract methods are flexible too. While the majority of contracts call for specific quantities, calculated to represent all or a share of the total need, it is not uncommon to have a contract cover in more general terms the quantity "requirements" of an item, estimated to amount to a stated tonnage but not held strictly to that figure if it can be demonstrated that actual requiremens vary from the estimated total; in some cases this permissible variation is limited by setting upper and lower quantity limits within which the contract must be performed. The price factor also may be subject to adjustment in accordance with fluctuations in the market, labor rates, or competitive conditions.

In some commodity markets, trade practice limits the forward period for which contracts may be executed —some metals, for example, being sold for delivery no longer than three months in advance, or within a calendar quarter. This, of course, does not prevent purchases for more than a quarter's actual requirements, provided delivery is taken within the period and the material held on the buyer's inventory. There are also wartime limitations on the permissible amounts of purchases and inventory. Both speculative buying and governmental regulations are discussed in a later section.

Nearly all contracts contain a provision for mutually equitable termination of the arrangement for good reason and with reasonable notice. And of course any contract may be voided for non-performance on either side, with appropriate penalties or compensation imposed by law, though in any legitimate purchase contract it is presumed that the intent of both buyer and seller is to go through with the agreement as made. The termination of contracts is a particularly vital matter in connection with the present military program, which may represent a very special type of production —in many cases being quite foreign to a company's normal manufacturing activity, and with conditions of demand and distribution wholly outside the possibility of the company's own control. While the Purchasing Agent may have little voice in the terms of the contract under which his company is operating, this circumstance and the ever-present possibility of an abrupt termination indicate the need for extreme care regarding commitments which are based upon the contract and in his relationships with the company's suppliers.

Quantity in Open Market Buying

The alternative to contract procurement is "open market" buying, or purchasing in a series of independent transactions, each one specific as to quantity, terms, and delivery, each separately negotiated, and completed with the delivery and acceptance of the material. From a legal standpoint, such transactions have the same contractual force as the most extended commitments, but they are generally considered as a separate type of buying, and are referred to merely as orders. In most purchasing departments, such orders represent the bulk of the department's current procurement work, even though the larger items of purchase, both in volume and value, may be covered by contracts. The question of how much to buy, and how much to buy

at a time, is particularly pertinent in respect to these transactions.

The determination of economical purchase quantities involves both external and internal considerations. Among the outside factors are such questions as:

Quantity at the Source

1. *What is the economical manufacturing quantity?* On "shelf goods" or such standard items as small tools, hardware, bolts and nuts, office supplies, etc., which are made up in large quantities and distributed from the manufacturer's finished stores or from distributors' stocks, this is not a problem of the buyer. But on items which are produced to his order, such as forgings, castings or stampings to special design, fabricated parts and assemblies, watermarked papers, printed forms, containers, and a large variety of other products which may be standard items of purchase but not standard items in the vendor's line, it is perhaps the first consideration in buying.

It is assumed that the cost of production will have a large determining influence on price. This includes the time and cost of machine set-up, the size of the batch or lot which can be economically processed, the cost of patterns, dies, etc., which must be distributed over the unit cost of the quantity produced. Such factors tend to set a minimum quantity below which unit costs are excessively high and prices correspondingly high, for uneconomical manufacture means uneconomical purchasing. It does not necessarily follow that costs and prices will automatically or proportionately be reduced as ordering quantities are increased beyond this minimum point. The economic law of diminishing returns begins to make itself felt. The cost of batch processing, for example, may be constant for any quantity more than the minimum, or costs of reconditioning tools and dies may be incurred after a given volume of production has been accomplished.

Good purchasing requires an understanding of such factors, both as a general principle and in respect to particular suppliers, for differences in capacity and equipment or in organization may affect the respective cost structures of various manufacturers. One company may be favorably situated to handle small lots economically, but unable to handle long runs or mass production so advantageously, and the reverse may be true in another company. One indication of such conditions may be found in the quantity differentials quoted by various producers. Well informed salesmen, working closely with their estimating departments, are another valuable source of information. On important items in the purchasing program, it will probably be to the advantage of the Purchasing Agent to make his own investigation, inspecting the plants of prospective suppliers and familiarizing himself with the manufacturing processes involved, with special reference to his own requirements.

Carload Economies

2. *What is the economical unit of transportation?* Cost of delivery, cartage and handling, as well as the invoice price of a product, is a definite part of the buyer's cost, and frequently a substantial part. Transportation charges are quoted on the basis of carload and less-than-carload lots, and this differential must be taken into account in any purchase calculation for determining the economical quantity to buy. As in the previous section, this factor tends only to set a minimum quantity advantage. If purchases are made in carload lots, there is rarely any saving in transportation charges to be obtained by ordering two or more carloads, though there may be a saving in the handling or unloading of more than one carload at a time. This factor will naturally vary with the type of product and type of carrier used, and with the length of haul—whether procured locally or from a considerable distance, or if picked up by the buyer's own truck.

There are various ways of meeting the less-than-carload problem in buying. There is the possibility of arranging for mixed carloads or combination shipments of related products from a given supplier. There is the possibility of using other than rail transportation; truckloads—of various capacity, all less than the freight carload—are frequently feasible and economical. Then the whole policy of procurement from strategically located branch or warehouse stocks, or from local distributors and supply houses instead of dealing directly with a distant manufacturer, all has a practical bearing on this matter of transportation cost.

Standards of Quantity

3. *What is the commercial packing unit?* While some items are procurable on a bulk basis or are specially cased or crated according to the quantity involved in an order, a great proportion of them are packaged in standard unit quantities—reams of paper, bolts or rolls of specified or approximate yardage, barrels or drums of standard capacity, cartons of a hundred, or a gross, or a thousand, or specified multiples thereof. This practice is a convenience, not only in marketing, but also in storage, counting, inventory handling, and disbursement. Insofar as purchase quantities can be made to conform with these standard units, it is advantageous and economical to observe the practice, which makes the difference between a routine standard and a special or non-standard purchase. Vendors customarily—and properly—make an additional charge for fractional or "broken" package units, and apparent savings from calculating requirements down to the last decimal place may be more than outweighed by increased costs.

The Procurement Cycle

4. *How long a time is required for delivery?* The time factor is an element of prime importance in determining purchase quantities. This involves both the length of the manufacturing cycle (if goods are made to order) and the time in transit, for it is the buyer's responsibility to see that the materials are delivered and on hand when they are needed. Scheduling of purchases therefore involves both the matter of timing the orders so as to meet a required delivery date, and providing a sufficient quantity to carry through the ensuing period of the manufacturing cycle and transit time until the delivery may be expected to arrive. The vendor's own scheduling problems must also be taken into consideration, for even in normal times it is not a safe assumption that production will start immediately upon receipt of the order, so that this third element (which is chronologically the first) of possible delay and set-up time must be added to the other two.

The experience of the past several years, covering a wide range in the rate of industrial activity, in both production and transportation, demonstrates very strikingly the fact that the time factor is distinctly a variable. It has always been considered desirable to secure a definite delivery promise from the vendor; it is imperative to do so now, and to check upon that promise with a systematic process of follow-up. But as it

affects the determination of quantities this is not sufficient, for it is after-the-fact information, and adequate quantity scheduling requires foresight. It is also recognized that most attempts to short-cut the normal time cycle—by issuing "rush" orders, putting pressure on the vendor, and substituting faster but more expensive methods of transportation, are uneconomical methods of purchase and are not conducive to satisfactory relations with suppliers.

Past experience with deliveries, as shown on the purchase record, is an important and useful guide to scheduling and quantity determination. It also provides specific information regarding the comparative facilities and practice of various vendors in respect to promptness —another important variable. It is becoming more common practice to include upon the purchase record card for special and made-to-order items a notation of the time required for manufacture and for delivery. This is subject to revision as conditions may warrant a change, and in general, the proper and prudent purchase quantities will be greater as the time cycle is extended, and will contract as materials become more readily available and as suppliers are in a position to give better service.

Market Trends

5. *What are the market conditions?* Another external factor, which is independent of conditions in either the buyer's or the vendor's plant, is the state and the trend of the market. When prices are tending upward, so that replacement costs are likely to be higher when materials and supplies have been used and come up for re-order, a policy of buying in larger quantities is indicated as the means for keeping down average costs. Conversely, when prices are tending downward, ordering quantities may be curtailed and orders placed at more frequent intervals—the familiar policy of "hand-to-mouth" purchasing—so as to gain the market advantage of lower prices at an earlier date, to avoid acquiring large stocks at the higher level, and to keep average costs down.

Inventory Factors

The factors listed above all have their origin outside the buyer's own company. They can be studied and learned, and buying practices adjusted to the existing conditions, though they are not subject to policy control. In addition to these factors, there are a number of considerations affecting quantity, which are chiefly matters of policy and decision within his own organization. These fall broadly into two classifications, which may be described as inventory factors and commercial factors.

6. *Inventory carrying costs.* Just as the cost of transportation must be added to invoice price to determine the cost of material up to the point of delivery, so must the cost of carrying that material in inventory up to the time of use be added in order to complete the calculation of material cost as a component part of the product or as an operating supply. This cost includes such overhead items and space and facilities for storage; direct charges for handling, distribution, supervision, and keeping records in the stores department; insurance on the material and interest on the investment; and possible losses through depreciation and obsolescence.

These are all normal costs incident to the conduct of any continuing business, and are no reflection against the purchasing operation unless they are permitted to go beyond reasonable limits because of overbuying. They are necessarily incurred to a greater or less degree in the form of working inventory and spare parts, in order to insure continuity of operation, avoiding idle machine time due to lack of materials or supplies, and minimizing the hazards of ordinary breakdowns, all of which would quickly overbalance any monetary saving effected by a strictly current procurement program, not to mention the element of convenience. In some service industries such as public utilities, the extent of this inventory may approach a complete duplication of active facilities as stand-by equipment. But these costs are also subject to control, and beyond the proportion of such costs which may properly be regarded as "operations insurance," additional inventory carrying costs must be regarded as an offset to other procurement economies. The extent to which these costs may be justified is the measure of sound inventory policy.

The Cost of Inventory

Estimates vary widely as to what carrying costs actually amount to. It is quite generally conceded that 10% of the purchase price is the lowest figure that may safely be taken, assuming reasonably efficient methods of storeskeeping and no extraordinary developments that would render obsolete any large quantity of stock without notice. A study made by the U. S. Department of Commerce, covering supply items for manufacturing industries, arrives at the figure of 25%, of which 15% represents depreciation and obsolescence. Without questioning the accuracy of that specialized study, the latter factor seems excessively high to be used as an average cost increment on total inventory. But at best, a very considerable percentage is involved.

There will of course be many divergencies from any generalization of this sort, when individual instances come under review. It is also open to question whether, in such a calculation, cost—a dollar item—may properly be correlated with the dollar value of the inventory. It can logically be argued that bulk, and not dollar value, determines the amount of space required for storage, that the character of storage facilities determines the insurance rates, that the nature of the goods determines the depreciation risk, and that, in fact, dollar value is the critical factor only in respect to interest on the investment in materials.

Quantities Affects Cost

On the other hand, in considering the inventory of any given item, it is indubitably true that *relative* bulk, insurance costs, investment, etc., are proportionate to the relative quantities carried, and in turn are proportionate to dollar values. Certainly the risks of loss from depreciation and obsolescence are minimized as smaller quantities, purchased and stored, are involved. Consequently in arriving at an overall average or approximation, this dollar measure may be taken as a base sufficiently serviceable for the purpose—which is not so much to get a meticulously accurate calculation, as to assure that this important element of cost will not be overlooked and that the company will not deceive itself by failing to make adequate provision for it.

The important thing to note is that purchase quantities, reflected in the size of the total inventory and the length of time it is held before being put to use, may have a substantial effect, for better or worse, on carrying costs. Thus the ordering quantity becomes one of the focal points at which inventory control can

be effectively exercised. It is well worth while for any company to make a careful study of carrying costs with a view to possible improvements in storekeeping methods and inventory policies, and to check back on these figures from time to time as a measure of performance and policy.

Turnover as a Yardstick

7. *Inventory turnover.* The purchasing department, in its approach to inventory policy, stands between two fires. The ideal of the engineer and operating man is to have plenty of material on hand. The storeskeeper's fetish is turnover, the factor against which he measures his accomplishment and efficiency. The Purchasing Agent, seeking to determine the most economical policy, without disparaging the intent of either of these conflicting schools of thought, recognizes that additional and unnecessary costs will probably be involved in following either extreme. The mounting costs incurred by a too liberal interpretation of "How much is plenty?" have been discussed in the preceding section. Reference was also made to the advantages of a healthy turnover in cutting down those costs. Yet with all due respect to a good turnover record, most Purchasing Agents will agree that it is very much overrated as a yardstick of efficiency.

At least it is fair to say that careful attention to turnover is valuable as a means toward economical stores policies, but that when turnover rather than safety and economy becomes the objective, it defeats its own purpose. For it can readily be demonstrated that a high turnover record can very easily be established simply by disregarding the canons of good procurement—by sacrificing the assurance of uninterrupted production, and by defaulting the advantages of quantity buying; by purchasing from day to day in excessively small quantities, thereby raising both the cost of the materials and the cost of the purchasing operation.

Turnover is highly desirable, but only within the limits of sound purchasing and operating practice. And in measuring turnover, it should be regarded selectively, according to the types of material and the purpose for which each is carried in the inventory. Overall figures may not only have little significance, but may actually be misleading and conceal serious shortcomings in storeskeeping.

A Selective Problem

There will be at least two groups of materials, quite different in character and in the standards of turnover which may properly be applied: (1) product materials and expendable supplies (and finished goods inventories may also be included here), on which a healthy rate of turnover indicates good scheduling; and (2) spare parts and stand-by equipment, for which the ideal condition would be to have no need arise, and consequently no turnover whatever, but which must nevertheless be maintained in inventory in the interest of safety. It is obvious that the same policy and the same measurement can not be applied in both cases, and any analysis made on the total basis may be very misleading in regard to one or the other. For example, if the rate of turnover on spare parts shows a marked increase, it is probably evidence that something is wrong in the operating conditions, or that the wrong type or quality of part is being used, or that the equipment is not adapted to the job, and some corrective measures are in order.

Beyond segregating these two classes of material in inventory records and accounts, it is sometimes helpful to make a further classification of the items in the first group as either (a) rapidly moving or (b) slow moving items. Attention may then be concentrated on the latter group. Nothing reduces average rates of turnover more than quantities or dead material carried along in the inventory from month to month or year to year, accumulating carrying charges to the point where cost is far in excess of any intrinsic value that may be recoverable, and constantly increasing the hazard of total loss through obsolescence—if indeed these materials are not already obsolete in every sense except acknowledging the fact and writing off the loss on the books.

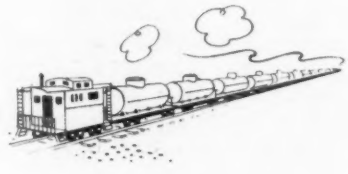
The storeskeeper does his company a real service when he notes such slow moving items and helps to devise ways of using them—by transfer, or adaptation, or substitution—or when he sees to it that they are disposed of as surplus or scrap. The emphasis of recent months on the conservation of materials by a comprehensive salvage program, and the popularization of such slogans as "Use it or scrap it" or "If it hasn't been used for six months it won't be needed" have given new impetus to this viewpoint on materials which ought to be in the rapidly moving class but are not. It should be noted here that most such situations have their origin in wrong procurement quantities—sometimes the fault of requisitioning, and sometimes the fault of overbuying.

Inventory and Operating Rates

8. *The time factor.* Quantity is, by definition, a matter of concrete physical units, but in the course of this discussion it has already been apparent that as a purchasing factor, quantity is very closely related to timing. In considering inventory factors, this is also true. The storeskeeper reckons inventory strictly in the physical sense, and the accountant or financial officer reckons it in dollar value, but to the Purchasing Agent it represents coverage for a certain number of days or weeks in advance.

There is every reason why this should be the case. As previously pointed out, purchase quantities are basically determined by requirements over a given period of time, and by the time cycle of procurement, and all scheduling is compounded of these two elements —quantity and time.

There is another important relationship which emphasizes this line of reasoning—the relationship of inventory quantity to operating rates. Take an inventory of any given volume and value. It may represent, for example, three months supply at the prevailing rate of company operations, which may be regarded as normal supply coverage. Then comes a sudden sharp increase in demand, and the manufacturing program is doubled. There has been no change in inventory volume or in its dollar value, but now it represents only six weeks coverage, which may pose a very serious and urgent procurement problem for the purchasing department. The transition from a peace-time to a wartime program is a recent striking example of such a development, with many instances of even more drastic increases in the rate of operations, and the market dislocations which



followed in the ensuing rush of buying to extend coverage are fresh in every buyer's memory.

The converse of this example is equally serious, and is the cause of much concern to purchasing officers today. Consider the possible effect of a sudden curtailment or cessation of the war production program. Then the present normal inventory, geared to maximum production rates, suddenly represents an extension of coverage to six months or a year or more, with no change in inventory volume. It is apparent that this would mean a great increase in carrying costs until the materials could be utilized, a sharp decline in turnover, and enormously multiplied hazards of obsolescence. It is not only in wartime that these situations are encountered, though this is probably the most obvious and dramatic example; similar conditions arise in economic depressions or booms, or in the case of technological changes within an industry, or in style fads or other fluctuations in demand.

Coverage is Important

The importance of the time relationship is also indicated when we consider the effects of changing market prices on inventory valuation. Assuming a constant rate of operation and a constant inventory quantity necessary to maintain that program. If the cost of materials goes up or down, the dollar value of that inventory will be greater or less accordingly, as turnover proceeds and the items are replaced at the new cost. If inventory policy were to be governed by the amount of the investment, or even by the relative investment to output, the balance would quickly be destroyed. When markets were high, the inventory reserves of material would be inadequate, and when markets were low the investment would still be unnecessarily high.

The most significant measures of industrial inventories and stocks of material, from a purchasing standpoint, are those which are expressed in terms of time coverage at prevailing rates of use. Examples of such indices are the monthly coal report of the National Association of Purchasing Agents and the monthly survey of business conditions carried on for many years by the same organization. It is also of interest to note that governmental purchase and inventory regulations in this wartime economy are based primarily on the time factor—quarterly requirements, and reasonable working inventories, which have been unofficia'ly interpreted as a thirty to sixty days coverage, with more specific periods cited in special instances.

Bottlenecks and Surplus

9. *Inventory balance.* Another aspect of quantity important to the purchasing executive concerns the relative amounts of various materials to be bought and stored. In a perfectly uniform schedule of manufacture, with a covering bill of materials for the manufactured product, the quantity required of each item would bear a fixed relationship to that of every other item. Practically, this simple state of affairs is rarely if ever encountered. As soon as you have more than one product in a line, with variable relative rates of demand and output, and with one or more materials or supplies common to several products (and the duplication is likely to be rather high in respect to both materials and supplies used in any line of related products) the problem of a reasonably balanced inventory becomes more complicated. Accelerated use of one item is reflected in increased demand for other items, and the purchasing program must be adjusted accordingly, although the new requirement may not be immediately apparent from any one requisition. War production, with its accompaniment of picturesque slogans, has made us acutely conscious of "bottlenecks" in material supply, but that condition has always existed. No production schedule is adequately provided for until the last component part, the smallest fastener, the container, closure, and label, have been procured. Balance of inventory is imperative.

Many standard items are not purchased upon exact requirements, and the inventory stock is used as a reservoir or cushion. The familiar method of "maximum and minimum" inventory quanties and ordering points does not make for a state of balance at any given time. It is, in fact, based on a theory of imbalance that will keep inventory investment and average quantities at a more or less constant level, for it is not assumed that all items will be at the maximum supply or at the minimum supply at the same time. Any system of maximum and minimum quantities must be flexible and subject to adjustment as conditions change. Such adjustment is important as a means of maintaining a reasonable inventory balance as well as in respect to total requirements and rate of use.

Commercial Factors

In addition to these inventory factors affecting the determination of purchase quantities, there are a number of commercial factors which deserve consideration. Three of these are of particular importance.

10. *Cost of small orders.* There are no accurate general statistics on the cost of issuing purchase orders. While it is true that negotiations may be longer and more involved on the larger and more important purchases, this is not necessarily the case, and certainly there is no proportionate relationship to the quantity or value involved. There is a minimum cost of clerical, mechanical and handling operations incident to the issue of every order, quite irrespective of quantity. It becomes most noticeable in the case of very small quantities, which not infrequently result in a cost of purchasing that is actually greater than the cost of the material itself. These small orders are a constant source of irritation and concern to vendors, who see profits dissipated or turned into losses by the cost of handling and delivery. It should be no less a cause of concern to the purchasing department, though it is not so readily apparent since the cost of purchasing is rarely applied as a direct cost against individual purchase transactions.

In the interest of reducing the number of excessively small purchases, three courses are open to the Purchasing Agent: (1) arbitrarily increasing the quantity and extending the period of coverage; (2) issuing blanket orders, with pick-up service, and eliminating much of the detailed clerical and accounting procedure in respect to individual deliveries; or (3) combining orders for related items procurable from a single source, such as miscellaneous mill supplies bought from the local distributor. It is probably impracticable to calculate the exact point at which any one of these procedures becomes most feasible and economical in balancing the cost of purchasing against the ordering quantity, but departmental policies can be evolved to alleviate this condition in its more frequently recurring phases. A good example is the practice of one large company, which gets monthly quotations on a list of about 125 standard mill supply items and handles all the business for that month with one order and one invoice from one supplier, on the basis of the most favorable overall quotation. The purchase advantage in the case of any one item may be

Factors Which Determine Purchase Quantities

EXTERNAL FACTORS	INVENTORY FACTORS	COMMERCIAL AND POLICY FACTORS
Economical manufacturing quantity	Storage facilities	Forward coverage
Economical shipping quantity	Cost of handling and supervision	Contracts vs. open market
Standard packaging unit	Interest on investment	Cost of issuing orders
Manufacturing time cycle	Insurance	Quantity differentials
Time in transit	Depreciation and obsolescence	Speculative buying
Market trends	Turnover and balance	Reciprocity

sacrificed by this method but the saving in purchase cost more than outweighs that possibility, and the total quantity of this class of materials is used to advantage in making a desirable order out of what might otherwise become a whole series of headaches to the buyer and to the vendor alike.

11. *Quantity differentials.* The effect of quantity on price has been mentioned in a previous section. The resultant price advantages, usually expressed in a scale of price differentials or discounts on larger quantities, have a direct bearing on the commercial quantity to buy, for the Purchasing Agent will wish to avail himself of the lower price up to the point where other considerations incident to the larger quantities involved will outweigh the advantage. This usually is accomplished by analyzing requirements and adjusting quantities to come into the more favorable price brackets if possible.

Most price differentials apply to the quantity represented in a single order, and must be considered as a part of each individual transaction. On some products, however, the quantity is cumulative over a year or other stated period. This has the effect of restricting purchases to a single supplier in order to arrive at the maximum total and it may involve some extension of inventory at the end of the year to arrive at the proper quantity; otherwise the same principles apply.

12. *Reciprocity.* When reciprocity is a factor in buying, the most common effect on purchase quantities is a division of the business more or less closely proportional to the reciprocal buying position of various suppliers. If that policy is followed, ordinary principles of determining proper ordering quantities may be sacrificed, and it is presumed that advantages in sales and customer relationships compensate for this. Reciprocity has never been acknowledged as a sound purchasing principle, and has been traditionally opposed by purchasing men, but in recent years and especially as a result of methods developed during the depression years of the 1930s, when the pressure for reciprocal buying came most strongly from within the buyer's own organization, it has been accepted as a business fact. The purchasing executive, as an organization man, has the responsibility of using reciprocity in the most intelligent and equitable manner.

This is largely a matter of keeping purchase quantity records in such a form that they can be quickly and accurately analyzed as to the sources of supply involved, and correlated with sales records. Many purchase records are set up with this specific requirement in mind The problem then becomes one of determining not the most economical quantity in respect to the items affected, but the most equitable or advantageous quantity distribution from the viewpoint of actual or prospective reciprocal advantages.

Major and Special Materials

There are some materials on almost every purchase schedule—usually the most important raw materials entering into a product—to which the ordinary principles of quantity purchase do not apply, being less significant than long range market considerations which may involve both bargaining and speculative elements, or highly specialized skills in selecting a particular grade or quality of material. Especially in industries which are based predominantly on a single raw material which represents the bulk of cost in the finished product, such as tocacco, leather, rubber, wheat, wool, or cotton, in their respective industries, or chemicals used in the manufacture of medicinal and cosmetic preparations, it is not uncommon to find the purchase of that material regarded as an independent problem in procurement, and handled outside the general purchasing department and purchasing routine. There are examples where a separate subsidiary company has been set up for the specific purpose of purchasing tobacco, staffed by a corps of buyers who travel the circuit of the auctions characteristic of this trade; or where wool buyers circle the world in normal times, selecting and purchasing the clip in Australia, England, and other countries for their company's requirements. Such skills frequently are in the nature of the old guild crafts, and are passed on from father to son.

The trend over a considerable span of years has been away from such individualistic buying practices. The development of standard and accurate grading on most commodities, and the facilities offered by commodity exchanges, have added practical force to the contention that such purchasing is in fact a part of the complete procurement program, and belongs in the purchasing department. The customary purchasing organization plan is based upon commodity groups, with each buyer a specialist in his field. Under such a system, there would seem to be a logical place for these super-specialists within the framework of the general buying organization. Yet even in the railroad field today, where purchasing is highly organized under central control, we find such officers as fuel agent, timber agent, and

stationer, independent of the General Purchasing Agent's jurisdiction, but reporting to the Vice President in charge of Purchases and Stores.

A Management Responsibility

In reaching a decision on this issue in an individual company and on an individual product, the deciding factor is not altogether the dominant volume of a particular class of material. Rather, it is the question of whether the company's profits are to be sought in production, service, and marketing, or whether any considerable portion of the profits are to be sought from the materials themselves, in the form of inventory appreciation. In the former case, the purchasing is essentially a matter of procurement service, the responsibility in buying being to keep the company in a good competitive position so far as material costs are concerned. In the latter case, the buying is a matter of executive policy. There are plenty of cases in which the latter is indubitably — and legitimately — the case. Many industrial enterprises are founded principally upon the owner-manager's intimate familiarity with one commodity or their profit potential depends chiefly on astute judgment and fortunate speculation in the commodity markets, for under such circumstances this may represent the chief employment of the company's capital. But speculation has no part in the science of industrial procurement, and such responsibility for profits is beyond even the most liberal definition of the purchasing function.

The significance of such a situation in respect to purchase quantities is that the normal factors cited in earlier sections of this article as helping to determine how much to buy, are all subordinated to the factor of market trends, which is but one of many considerations ordinarily taken into account by the Purchasing Agent. When such major commodities, sold in fluctuating markets, do come under the jurisdiction of the purchasing department, the buying policy is likely to be one of hedging in the futures exchanges during the period while goods are in process and until the product is ready for sale, to insure a competitive parity for the company and to minimize the risk of loss, but not with any objective or expectation of building up inventory profits.

Speculative Buying

It has already been pointed out that market trends do properly influence purchasing policies as to quantity and timing. Many purchasing departments keep a chart record on major commodities, spotting their own purchases on such charts and endeavoring to keep their average costs at or below the average. It is one of the accepted indicators of purchasing performance. But in measuring the efficiency of a purchasing policy and program, many companies—with the full cognizance of the purchasing executive—give no credit for inventory appreciation, although inventory losses appear as demerits against the buyer. The common practice of valuing inventories at cost or market, whichever is lower, rather than figuring them at replacement cost, is another example of this type of thought—a sound restraint against the temptation to speculate instead of following a policy of determining the right quantity to buy for predictable requirements over a reasonable period in advance, and taking all elements of cost into account.

There are, of course, many cases which lie somewhere between these two extremes. A Purchasing Agent may rcommend forward buying in larger quantities than usual if his analysis of the market indicates the wisdom of such a policy due to conditions and trends. But if this involves any abnormally large investment in materials, it will probably become a matter of executive and financial decision, and may require a special appropriation, with full knowledge and approval of the management as to the purpose and the reason.

Some companies have purchasing committees, including production, sales, and financial officers as well as the purchasing executive, for a periodic review of from one to twenty major commodities needed in their operations, and approve a monthly "authorized to purchase" quantity on each, as a guide to the buyer. His recommendation will carry considerable weight on such a committee, but any speculative decision will be a joint responsibility, as is entirely proper.

Other conditions which justify a deviation from strictly scientific determinations of quantity to buy and store include those materials procured from foreign sources, with hazards of supply and transportation delays, or whose markets are controlled by cartel; purchases made in anticipation of labor stoppages; and special materials used by only a limited number of buyers and procurable from a limited number of sellers, which are particularly vulnerable to collusive market manipulation.

Governmental Controls

At the present time, with military demands taking precedence over all other considerations, with the necessity of channeling materials to the most urgent use and of conserving total supply by avoiding any accumulation of idle inventories, governmental regulation of purchase quanties and inventories is inevitable. It is, naturally, on a selective basis, according to the need. And, as a temporary emergency measure, it may not have a place in the discussion of basic principles other than to point out that, for the time being, it has seriously modified the application of these principles.

There can be no doubt that some of these regulations make for uneconomical buying practice—in curtailing quantities, limiting working inventories to uncomfortable and unsafe margins, cutting maintenance stocks to bare minimums, and forcing the liquidation of some supplies which become "surplus" by definition if not by actual analysis. On the other hand, it should be noted that these very regulations make mandatory some of the principles which have been reported here as sound purchasing practice—careful estimates of demand over specific periods and for a definite purpose, closer scheduling of purchases both as to quantity and time, active turnover of items which go into the manufactured product, reduction of idle inventories, and the like. If the transition period during which these controls are relaxed can be tapered off so as not to precipitate serious problems and dislocations of its own in regard to material quantities, the experience may provide a forceful demonstration of the advantages of these principles, with lasting bentfit to purchasing practice.

Next Month: Technique of the Interview

WHAT'LL YOU HAVE?

The requisition writer for our procurement services abroad has the double-barrelled problem of describing his needs in the idiom that his supplier will understand

By COL. WAYNE R. ALLEN
Headquarters, General Purchasing Board, U. S. Army

IT IS A curious thing how two nations such as England and America, who speak and write the same language, can be at such variance in the nomenclature and pronunciations of so many items. There does not seem to be any clear-cut rule as to the explanation of these differences, but they are nevertheless there. I am sure that in your contacts over here you have all encountered some of these differences.

It was forcibly brought home to me by an experience I had some weeks ago at a meeting of the London County Council, at which the Countess of Limerick was discussing this same subject with me. As you all know, the English invariably use the broad 'a' and the Americans the short 'a' in most instances, with the possible exception of some New Englanders, particularly Bostonians. The Countess went on to illustrate that the Americans say *tomatoes* and the British say *tomahtoes*. The British say *bahth* and Americans say *bath*, the British say *cahnt* and the Americans say *cant*. But then the British say *paytriotic* and the Americans say *pahtriotic*. In this instance the situation is reversed, the British use the short 'a' and the Americans use the broad 'a'. All of which goes to show how inconsistent we both are, even though we do fundamentally speak the same language.

In a great many instances the Americans try to pronounce words as they are spelled, and a typical illustration of this is another experience I had. When motoring to Cheltenham one day I asked my whereabouts of an American soldier, and he said that I was in High *Wycombee* and that I was on the correct route for *Cheltenham Spay*.

We all come in contact with some of these more common differences every day. A few typical examples are as follows:

American	*British*
Flashlight	Torch
Suspenders	Braces
Dessert	Sweet or Trifle
Skedule	Schedule
Aluminum	Aluminium

If you want to get a hair-cut over here you go to the "Hairdresser",

whereas in America you go to the "barber".

I have also been very much interested in the use of the word "straightaway", which evidently has two meanings over here, one meaning, in our terminology "right soon" or "immediately" and the other "straight ahead". If you ask how to get from here to there in England "straightaway" is the answer. "You can't miss it". And there isn't a straight stretch of road in all England. Reminds me of the old nursery rhyme (and London was the source of all the old nursery rhymes) which goes:

In London once I lost my way
In faring to and fro
And asked a little ragged boy
The way that I should go
He gave a nod, and then a wink
And told me to go there
Straight down the crooked lane,
And all around the Square.

Well, that is the way it is, all right. No different than 300 or 500 years ago. Narrow streets, crooked, but you go "straight down them", straightaway.

Straightaway is used in another sense here. If anything is wanted the Englishman will say: "I'll lay on it, straightaway". "Straightaway" is like "Manana" is in Mexico, it means tomorrow or day after tomorrow. There are also great variances in our units of measurement, and some difficulty and misunderstanding can easily arise in dealing with the British unless we understand the way in which they use common terms of measurement. For instance, the ton over here is equivalent to 2240 lbs. whereas the American ton is equivalent to 2000 lbs. A Hundredweight in America is 100 lbs. in Great Britain it is 112 lbs.

Weights and Measures

Another illustration is that goods or produce usually sold in the United States by capacity, such as bushels, are here sold by weight, sometimes expressed in "stones" or "scores". As you know, a "stone" is equivalent to 14 lbs. and a "score" is equal to 20 lbs. Packaging of articles in ½-stones (7 lbs.) or ¼-stones (3½ lbs.) is customary.

These differences which I have cited play an important part in our dealing with the British for items which are procurable over here. One of the first things that I did upon arriving in this country was to take a trip through a number of the British Depots, and it was again brought home to me the differences in names and descriptions which were given to articles of common issue by the British War Office as compared with ours.

One of the best examples that I know of is that connected with nails. In this instance the Americans use a very old and antiquated method of description. We refer to nails as pennyweights, which is a vestige of the past, as this term was originally used in connection with the weight of a silver penny, and is equivalent to approximately 1/20 of an ounce. The British, on the other hand, describe nails by their length. We had a great deal of difficulty in correlating these two methods of description because our people never knew how long a 6d or 20d nail was, but after getting together with the British and inspecting samples of our nails and samples of their nails we were able to arrive at a common understanding.

A New Vocabulary

Other instances of differences in British nomenclature are:

Can, corrugated, nesting, galvanized is a "Bin, steel, galvanized".
A dipper is a "pannikin".
Jug, enamelled is a "pitcher", enamelled.
Knife, skinning is a knife "flaying".
Turners, cake are "slives, egg or fish".
A lantern, kerosene, Army is a "lamp, hurricane".
Bag, bed is a "paillasse".
Bench, wood is "form, G.S."
Can, garbage is a "bin, dust".

Now I had a very interesting experience in connection with garbage cans. When we first arrived over here we placed a demand on the British War Office for a certain quantity of garbage cans, and the British informed us, after giving due consideration to our request, that they did not have any such item in their stores. Whereupon we immediately prepared a requisition for our requirements of garbage cans on the United States. It involved a considerable quantity, and consequently a large amount of ship tonnage. As you know, one of the fundamental objectives of our procurement policy over here is to save as much ship space as possible, and we have where necessary, made whatever compromises in quality or specifications that common sense dictated.

Some weeks later I was spending the week-end with a cousin of mine, and in showing me around his place I was finally taken out to the garden. There was a nice cement or concrete path, clearly marked with circles. I asked him how he had been so clever and what he had used to make the circles. He told me that he used the top of a dust bin. I said what is a dustbin? Whereupon he took me over and showed me. It developed that the dust bin was what we call a garbage can. Upon return to my office I immediately called the British War Office and told them that what we meant by garbage can was what they call a "dust bin". They immediately understood and said that they had plenty of them on hand and could most certainly take care of our requirements. We thereupon immediately cancelled the requistion for this item on the United States and saved a great many valuable ship tons.

Tacks, shoe are known in British terminolgy as "tingles"
Tent, pyramidal is a "bell tent"
Tent, store is a "marquee"
Paulin is a "tarpaulin, cover, waterproof"
rope, manila, 5/16″ diameter, lbs. in British terminology is "cordage, sisal, white, 1″ circumference fathoms".

You will note there that we describe rope in measurements of the diameter and the weight in lbs. whereas the British describe it in measurement of circumference and the length in fathoms.

More Examples

Under Warehouse Equipment we have such examples as:

Handle, shovel — "Helve, shovel"
A hook, cargo is a "hook, stevedore"
A truck, hand, 2-wheel is a "barrow, truck"
A wheel barrow, wood, garden is a "barrow, wheel, entrenching Mark III"

Under Equipage we have such examples as:

Bag, barrack—"kit bag"
Canteen—"water bottle"
Meat can is a "mess tin"
Tag, identification is an "identity disc"

Under Hand Tools we have:

Axes, chopping, single bit—"Axes, felling"
A glass cutter is a "diamond, glaziers"
Shovel, coal, scoop—"Shovel, coal heavers"
A torch, blow is a "lamp, brazing"

Now here's a good one:

A wrench, monkey, adjustable is a "spanner, adjustable"

Continued on page 256

They Speak a Language the Japs Understand

FIRE ONE! FIRE TWO!

From the first day of this war, the crews of U. S. submarines have thus "reasoned" with the enemy—and in his own waters.

They know *action* and *engines*—for they literally live with and by the Diesels which take them there and bring them back.

Many of these Diesels are Fairbanks-Morse Diesels. We feel that nothing short of our level best is good enough for these men of the silent service.

FAIRBANKS, MORSE & CO.

New PRODUCTS · IDEAS

NEW IDENTIFICATION UNIT

New model industrial identification unit being introduced by Photographic Equipment, Inc., 210 E. Park Way, Pittsburgh, Pa., includes white washable background, self-leveling easel base, increased counterweight capacity, finger printing equipment, demountable light brackets, elevator can't-slip ratchet lock, and accurate height indicator, preset camera, and numbering device.

TEMPERED GLASS PLATE TANKS

Tanks made of heavy tempered glass plates, for industrial or commercial applications requiring a non-corrosive, shock-resisting material, are announced by the Pittsburgh Plate Glass Co., Pittsburgh, Pa. Glass is said to be four to five times stronger than ordinary glass, and to have high resistance to thermal shock. It will withstand operating temperatures of 650 deg. F., and instantaneous thermal shock of 400 to 500 deg. Joints are accurately ground. Tank is usually surrounded by wooden frame work filled with a compound.

NEW FLOODLIGHTING PROJECTORS

New floodlighting projector designed to meet wartime needs, by Benjamin Electric Co., Des Plaines, Ill., embodies all features of previous models except that parts formerly made of aluminum, brass or other non-ferrous metals are now furnished in steel or cast-iron specially treated by porcelain enameling, and other rust-proofing to make them exceptionally resistant to corrosive atmospheric influences and weathering. It is known as the RDS; and comes in two models; the RDS 14 for 300 and 500 general service lamps or 500 watt floodlighting lamps; and the RDS 18 for 750 and 1000 watt general, or 1000 watt floodlighting lamps.

CARBON BLACK TWO GRADES

Two new grades of carbon black are announced by the United Carbon Co., Inc., Charlestown, W. Va. Kosmobile No. 77 made from natural gas by the channel process is for use in natural rubber and synthetics; has low heat build-up, fairly high resiliency, and good reinforcement properties. Kosmos 20 is semi-reinforcing type made from natural gas furnace process. Easy to process, develops little heat, and is highly resilient.

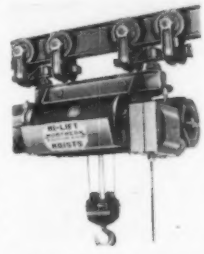
PAPERBOARD GARBAGE CANS

This paperboard garbage can, developed by Container Corporation of America, is manufactured by the Arvey Corporation, Chicago. The can is completely finished by the manufacturer and shipped in a ready-to-use form. The cans are made of a special asphalt treated paperboard supplied by the Consolidated Paper Co. of Monroe, Michigan. They are now on the market, being sold under the name "Utility Cans" through the regular channels of distribution.

WAR-TIME ROUGH METAL-FINISH

PEBBLE-TEX is the name of a new war-time rough metal finish available in variety of colors, announced by The Egyptian Lacquer Manufacturing Co., New York. Being used by manufacturers of parts for radio-equipment for military uses, and for instrument panels, fire control and listening devices, and other service items requiring textured high-speed metal finish. Rough and fine textures of varying degrees may be obtained from same mix. Also recommended for essential civilian articles.

LOW HEADROOM HOISTS



New line of low headroom hoists for use on various types of special section monorail track systems, is announced by the Northern Engineering Works, Detroit, Mich. Hoists have maximum hook lift, and are built in capacities from one ton up. Line includes both cab and floor controlled types, and can be furnished with variable speed push button control.

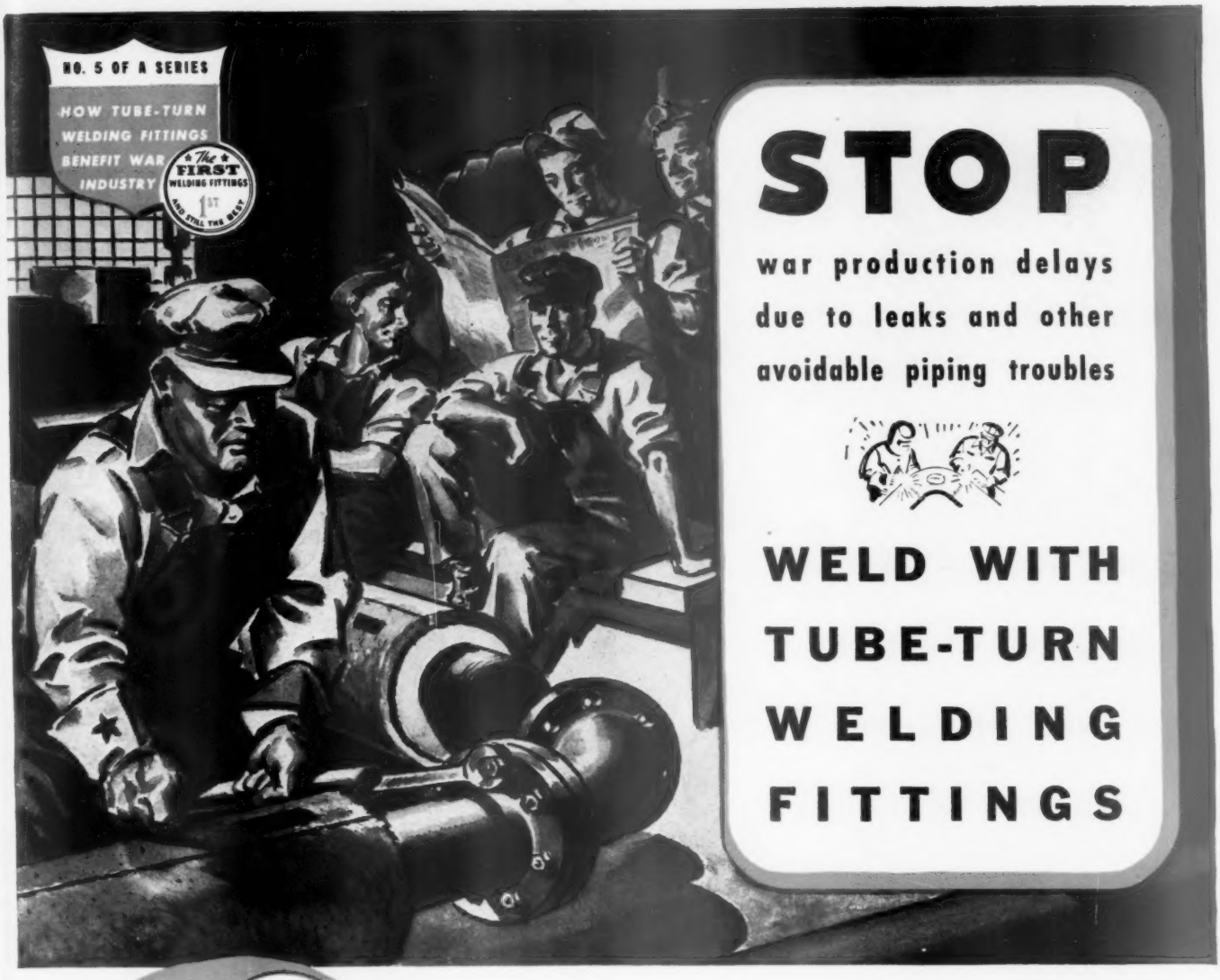
STACKERS WITH REVOLVING BASE

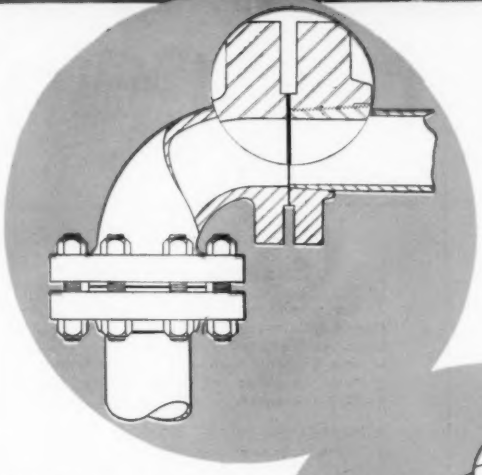
Revolators — Improved portable elevators with revolvable base are announced by Revolator Co., North Bergen, N. J. Platform may be loaded from any side, elevated, and then swung around to any desired point for unloading. Ideal for operating in cramped quarters, narrow aisles, and for tiering against walls. Hand power type available in capacities up to 5,000 lbs. Non-telescopic Revolators have hinged uprights, permitting top section to be folded over. Motor operated models operate on any commercial circuit. Capacities up to 6,000 lbs. May be had with flanged wheels for use on track. Telescopic models also available. Skyscraper has a lift of 54'.

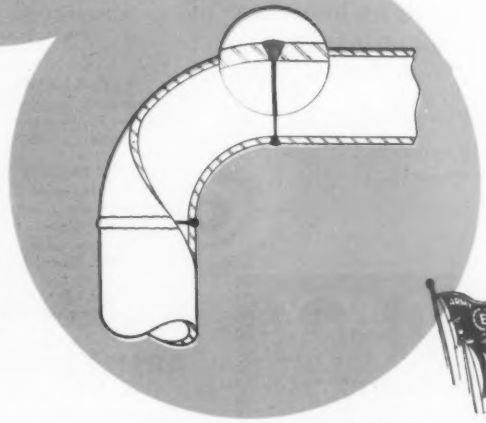
"DRILLITE" PLASTIC HOUSING

Using a new plastic material called "Drillite", Black & Decker Mfg. Co., Towson, Md., has designed plastic housings for its ¼" Standard drill and new ⅜" standard drill. Housing has high impact resistance, is heat resistant and is a perfect insulator against electric shock. Steel inserts in housing carry ball-bearings, and threaded steel

(Continued on page 114)


NO. 5 OF A SERIES
HOW TUBE-TURN WELDING FITTINGS BENEFIT WAR INDUSTRY
The FIRST WELDING FITTINGS 1ST AND STILL THE BEST
STOP
war production delays due to leaks and other avoidable piping troubles
WELD WITH TUBE-TURN WELDING FITTINGS





Contrast these diagrammatic drawings and enlarged cross-sections of a flanged ell (*above*) and a Tube-Turn 90° welding elbow (*below*) in a line. Note how the *welded* connection forms virtually a continuous tube without joints. Welding with Tube-Turn fittings *eliminates* the many maintenance headaches inherent with mechanically connected piping: leaks, gasket changes, bolt tightening, caulking, threading, difficult covering, and other inefficiencies that can seriously hamper war production.

REMEMBER these common-sense facts before you install new piping systems or replace old sections: welding with Tube-Turn fittings insures *permanently leakproof, trouble-free joints* and better fittings that last as long as the pipe itself. You banish many maintenance troubles which seriously interrupt the vital *piping arteries* that keep war plants going.

In addition, Tube-Turn welding fittings give you *greater strength and safety;* uniform wall thickness, for *easier, faster alignment and welding;* compact piping layouts that *save space, weight and installation time;* smooth inner walls that mean far *better flow, less corrosion* and *greater piping efficiency.*

TUBE-TURNS (INC.), LOUISVILLE, KY. *Branch offices:* New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Dayton, Washington, D. C., Tulsa, Houston, Los Angeles. *Distributors in principal cities.*

TUBE-TURN
TRADE MARK
Welding Fittings

When writing Tube-Turns please mention Purchasing

know HOW,
how FAST, *how* MUCH

Get This NEW Booklet
JUST OFF the Press

HOW TO DO intricate metal sanding and finishing jobs the best way. How to do them in *seconds* rather than minutes. And to know *how much* the new "gadgets" of Metalite Cloth cost. All clearly told in this new, illustrated, handy booklet.

You'll see the "Spira family"—Spirabands, Spirabelts, Spirapoints and Spiracords—not only as they look, but working on a variety of jobs.

You'll Want Several Copies of This Handy, Pocket Size Book

▲

Little Slotted Discs, Pencils and pre-formed Mushroom discs of Metalite Cloth, to fit the Mushroom sanding pad, are shown saving time and money at important wartime production tasks. Just seeing the pictures will suggest their use on dozens of operations in *your* plant.

The book answers myriad questions we have been asked by hundreds of concerns anxious to do present tedious metal finishing jobs faster, better and at lower cost per piece.

▲

A REQUEST on your letterhead will bring you as many copies as are needed for various Departments—Engineering, Procurement and Production.

This offer good only in U. S. A.

BEHR-MANNING • TROY, N. Y.
(DIVISION OF NORTON COMPANY)
Reliable Coated Abrasives Since 1872

(Continued from page 112)

inserts take assembly screws. Both tools are offered with either End Handle or Slide Handle control, and are equipped with Universal motors operating on either alternating or direct current.

PHOTOCOPY MACHINE

Foolproof, photocopy machine which makes photo-exact copies of anything written, printed, drawn or photographed, is introduced by American Photocopy Equipment Co., 2849 No. Clark St., Chicago. Can be operated by inexperienced boy or girl. Machine is said to be rapid in operation. Copies to 18 x 22".

PORTABLE FUME ELIMINATOR

Powerful exhauster and blower named Octupus Jr. has been developed by the Chelsea Fan & Blower Co., Irvington, N. J., as a portable unit to eliminate gases, fumes, etc. from closed-in places, such as welding rooms, vaults, basements, shipholds and the like. Can be hung in small manhole. Powered by ¾ HP motor; sucks or blows 2,000 cubic feet

(Continued on page 116)

Essential Tools

Today wheels must keep turning . . . shutdowns for repairs and change-overs must be brief, and a good wheel puller is essential to save valuable man and machine-hours and prevent breakage of irreplaceable wheels, pulleys and gears.

ARMSTRONG-BRAY Wheel Pullers come in types and sizes for all industrial applications.

STEELGRIP Standard Rigid Arm Pullers are of improved design. Will not slip from work. Arms are forged and heat-treated. 2-arm, 3-arm and special designs. 11 types.

CHAINGRIP Universal Pullers pull spoked wheels, solid gears, pinions, etc, even though they are a considerable distance from end of shaft. Proof tested chains have chain hook on one end, and special pulley hook on other. Furnished in 2 sizes.

Write for Catalog today. Be ready for emergencies — to keep wheels turning.

ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
5378 NORTHWEST HIGHWAY, CHICAGO, U. S. A.

What's behind the TRADE MARK?

BEHIND the trade mark of The Youngstown Sheet and Tube Company is an interesting story. Founded in 1900, its career is a typical American achievement, representing 43 years of steady, substantial growth. As the original plans of its founders have gradually unfolded, Youngstown has been permitted to make material contributions to the welfare of the nation.

Integrity of purpose, courage, ability, a spirit of venture, the will to serve its customers—these are some of the things that give life and substance to the Youngstown trade mark. They have built the company from its small beginning with only a few thousand tons capacity to a position among the leaders in 1943—with an annual capacity of 4,000,000 tons of steel.

We here at Youngstown are devoting our energies 100% to meeting the emergencies of war now as we did in World War I. When peace comes, we shall devote all our resources to the requirements of our thousands of customers old and new.

The YOUNGSTOWN SHEET AND TUBE COMPANY, *Youngstown, Ohio*
Manufacturers of
CARBON · ALLOY AND YOLOY STEELS

Pipe and Tubular Products • Sheets
Plates • Conduit • Bars • Tin Plate
Rods • Wire • Nails • Tie Plates and
Spikes • Alloy and Yoloy Steels

25-47F

OK'ed Everywhere!

"LENOX"

HACK SAWS
BAND SAWS

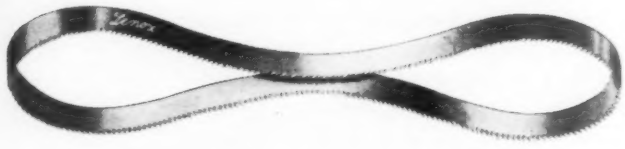
Hundreds of shops where metal cutting is an important part of their operations have found LENOX BLADES the answer to their problems.

There is the right blade for every metal cutting job in the complete Lenox Line.

Lenox Distributors throughout the country are serving industry from local stocks and our experienced service organizations are giving their full co-operation.

If you have metal cutting problems and have not tried LENOX we suggest that you see our Distributor in your territory. We know that you will okay the results.

AMERICAN SAW & MFG. CO. SPRINGFIELD, MASS.



LENOX
HACK SAWS
There isn't a metal cutting problem that you can be asked about that LENOX Hack Saws and Band Saws cannot solve with satisfaction.
"The Blade in the Plaid Box"
AMERICAN SAW & MFG. CO.
Springfield
Massachusetts
LENOX

(Continued from page 114)

per minute; operates in any position; weighs 70 lbs. Will be shipped on approval to manufacturer doing war work.

SMALL DIAMETER BUFFS Small diameter spirally sewed buffs with ¼" or reinforced pinhole centers are announced by the Handson-Van Winkle-Munning Co., Matawan, N. J. Buffs are available from one-inch diameter and up. Sections are 30 ply x 18" spiral sewing. Any number of sections can be glued together to make up thickness of wheel desired.

FIBRE SAFETY HELMET

Fiber Safety helmet being introduced by H. Apelt Importing & Trading Co., 155 John St., New York, is characterized as being "strong as steel". Reinforced crown withstands impact of 8 lb. ball dropped from height of 5 feet. Brim is flexible. Air holes for ventilation. Non conductor of electricity. Waterproof.

NEW ALL-PURPOSE FLUORESCENT New Idea in Fluorescent fixture design said to meet governmental requirements and U. S. Bureau of Standards regulation, including latest WPB Amendment to LO L-78, is announced by the Mitchell Manufacturing Co., Chicago. It's an all-purpose lamp. 40-watt units contain less than 3 lbs. of steel per unit; 100-watt units less than 4 lbs. of steel. Light. Rugged. U. L. and E.T.L. Fleur-O-Lier approved.

AUTOMATIC METAL PARTS WASHER New "Simplex" metal parts washer is announced by the Sturdy-Bilt Equipment Cor., West Allis, Wis., for cleaning, washing and preparation of small metal parts, castings, stampings, etc. Hot or cold solutions may be used. Soaking and washing action is said to positively

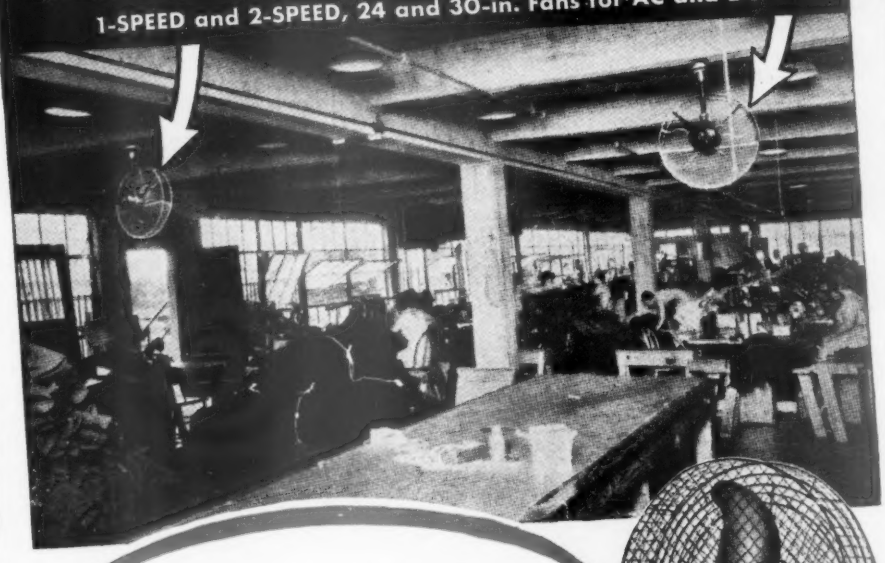
(Continued on page 118)

WANTED TO BUY: One or two complete barking drums 10' diameter by 30' long preferred. Give make, age, location, condition and price. Write Box #945 PURCHASING, 205 East 42nd Street, New York, N. Y.

This advertisement from a previous year, resulted in many a Factory Manager raising employe morale and efficiency that has carried over into the war years.

EMERSON-ELECTRIC *High Velocity* AIR CIRCULATORS

1-SPEED and 2-SPEED, 24 and 30-in. Fans for AC and DC

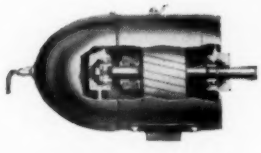


Improve LABOR EFFICIENCY and COMFORT

...ther your ...ntilation problem is loca... ...or ...emerson-Electric Air C... ...keep your workers cool

Emerson-Electric is now engaged 100% in the production of equipment for the Armed Forces. In addition to regular products are Power-operated Airplane Gun Turrets, Shell Parts and Electric Aircraft Motors.

Keeping Up with the Pace of War!



6000 HOURS
Without Re-Lubrication

Emerson-Electric Air Circulators have special thrust-type, grease-packed ball bearings that insure against excessive motor wear.

Whole battalions of Emerson-Electric Air Circulators are massed on the war production front. Backed by 53 years' specialized experience, they are built for long, hard, continuous service . . . It is easy to keep them in fighting trim—ready for the all-out drive against slowdowns and inefficiency that follow hot-weather fatigue. Merely give them the slight care they require . . . Write for Air Circulator Maintenance Instructions if you do not have them available.

THE EMERSON ELECTRIC MANUFACTURING COMPANY

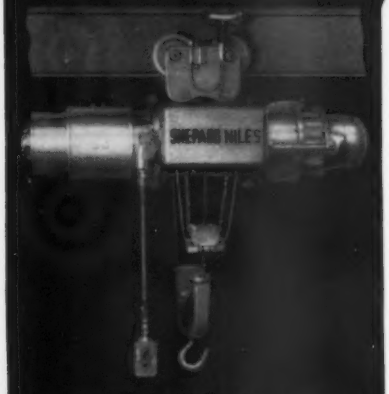
SAINT LOUIS . . . *Branches:* New York • Detroit • Chicago • Los Angeles • Davenport

306

EMERSON ELECTRIC

MOTORS • FANS • APPLIANCES • A. C. ARC WELDERS

When writing The Emerson Electric Manufacturing Company please mention Purchasing



Shepard Niles "Liftabout" general utility hoist, equipped with push-type trolley. Where accurate spotting is desired, hand-racked trolleys are recommended. Where considerable distance and fast travel speed is needed, a motor-driven trolley is an economical investment.

Motor-driven, Close Clearance or Low Head Room Hoist. Available with either push-type, hand-racked or motor-driven trolleys.

THE purpose of a hoist is to lift, convey, and deposit materials. Sounds simple, doesn't it? However, in choosing the right type of hoist for any given job, many conditions must be given thorough study.

Weights of loads, speed and distance of travel, both vertical and horizontal, as well as frequency of use are among the many factors which must first be considered for maximum hoist efficiency.

Perhaps your materials handling problem is one which requires complete coverage of a large area. If so, a Single Beam Hoist, in conjunction with a Single Beam Crane, shown above, will do the job. Or, if your requirements are for lifting only, a bolt-suspended hoist is the answer.

Whatever *your* materials handling problem, you may rest assured that Shepard Niles has the correct equipment for you. Put your problem up to a Shepard Niles representative.

Write for Bulletin No. 127.

SHEPARD NILES
CRANE & HOIST CORP.

462 SCHUYLER AVE. • MONTOUR FALLS, N. Y.

(Continued from page 116)

remove all foreign material. Tank is insulated. Motor-lever mechanism lowers and raises tray. Comes in three sizes—130 gal., 265 gal., and 450 gal. capacity. Special sizes for special requirements.

NON-SPARKING CONTAINERS

Conductive rubber containers for handling explosives in munitions plants are now being produced of synthetic rubber by the United States Rubber Company. The conductive rubber dissipates electric charges harmlessly. An additional safety feature is the absence of danger of mechanical shock from the rubber container.

HYDRAULIC TEST BENCH

Production increases up to 10 times with comparable savings in man hours are claimed for hydraulic test bench developed by R. Voigt & Son Co., 1060 Military Road, Buffalo, N. Y. Manufacturer claims AAA rating for production materials. Benches are individually designed and built to meet testing specifications and production schedules usually set up by the Army and Navy. Group of up to 20 units can be tested simultaneously. Built-in features include sealed oil tank, oil filter and oversized piping—making for sabotage-proof and fool-proof operation. Operation easily learned by the inexperienced.

SIMULTANEOUS BUCKING-RIVETING

New automatic bucker announced by Aero Tool Co., Burbank, Calif., is said to make possible simultaneous bucking and riveting. One woman can do the work that would otherwise require two operators in riveting airplane and other sheet metal parts. Bucker can be used with any standard rivet gun, and can be furnished with specially designed heads for any type of aircraft construction. Primary advantages are said to be extremely light weight and ease of handling, resulting in 50% reduction in labor costs, and better riveting in less time.

AUTOMATIC TIMING FURNACE LOADS

Application of its TSA-10 timer to a belt conveyor furnace which has to be loaded each time conveyor travels a specified distance, such as one foot, is announced by General Electric Co.,

(Continued on Page 120)

COMMANDOS of the Assembly Line...

Speed Nuts they're tough!

SPEED NUTS are truly the commandos of the assembly lines. They are tough — and fast in action. They are now being rushed into aircraft factories where they are vitally needed on the assembly lines.

Spring Steel SPEED NUTS are approved by the U. S. Army Air Forces and the Bureau of Aeronautics for most all non-structural attachments. Conversion to the use of Speed Nuts on all approved applications releases critical bar stock steel for other important uses.

Our Engineering Dept. will be glad to assist you in determining the proper approved locations where SPEED NUTS may be used. Request for information or assistance will receive immediate attention.

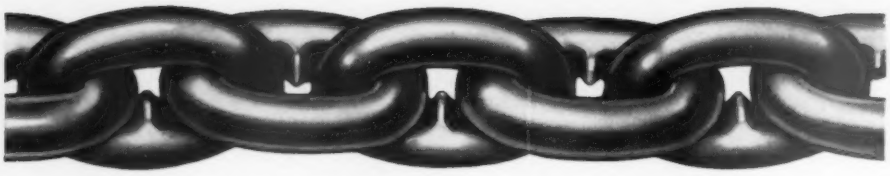
AIRCRAFT KEEP 'EM FLYING

TINNERMAN PRODUCTS INC.
2050 FULTON ROAD, CLEVELAND, OHIO

IN CANADA:
Wallace Barnes Co., Ltd., Hamilton, Ontario

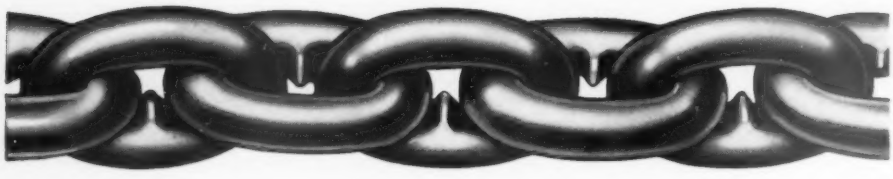
IN ENGLAND
Simmonds Aerocessories, Ltd., London

Speed Nuts THE FASTEST THING IN FASTENINGS! Speed Clips



STRONG LINKS

in the world's greatest production schedules



Almost overnight, American industrial manufacturers have achieved stupendous production records that make the Axis shudder. Strong links in reaching the world's greatest production schedules are men, machines and equipment.

Herc-Alloy Steel Chain with the patented "Inswell" electric weld is helping America maintain these fast schedules by providing safety and efficiency in the transportation and handling of materials. Fabricated from a special analysis heat treated alloy steel, the short, stubby links bridge square corners without gouging or kinking. Write for the facts on Herc-Alloy Chain, today. Descriptive catalog No. 44 will be sent on request.

CM HERC-ALLOY

STEEL CHAIN

★ ★ ★

INVEST REGULARLY IN VICTORY—BUY WAR BONDS AND STAMPS

★ ★ ★

COLUMBUS-McKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corporation)

120 FREMONT AVENUE, TONAWANDA, NEW YORK

BRANCH OFFICES: NEW YORK • CHICAGO • CLEVELAND

(Continued from page 118)

Schenectady, N. Y. When conveyor travels specified distance, timer contacts close, giving operator a signal to put in a new load. Timer is automatically reset by limit switch on loader, and starts measuring belt travel for next load. Furnace is loaded accurately regardless of conveyor speed.

EXPLOSION-PROOF MOTOR

New line of Vertical Hollow Shaft Explosion Proof motors is announced by Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago. They are designed for operation in Underwriters' Class I Group D hazardous gas locations, primarily for pumps handling large quantities of volatile materials such as high octane aviation gasoline.

APPROVED CO_2 FIRE EXTINGUISHER

Underwriters approved CO_2 Fire extinguisher which is claimed to literally "freeze" fire is announced by the General Detroit Corp., 2200 E. Jefferson Ave., Detroit, Mich. Tradestyle is C-D FOG. It is claimed to kill fire in a few seconds, and to make for easy control of fires in oils, greases, and flammable liquids. May be discharged safely on live electrical equipment. Does not freeze at sub-zero temperatures. Said to be harmless to finest mechanisms and materials.

SPRAY GUN SYPHON-COVER

Spray gun syphon feed cover which fits most standard quart friction top paint cans (and spray guns), is announced by the Master Manufacturing Co., 4715 N. Damen Ave., Chicago, Ill. It is known as the C3 Econ-o-can Cover. Makes it possible to keep colors in original cans. Quart cups now made of steel also available which are "best furnished on direct prime government orders".

REFRIGERATION AND COOLING EQUIPMENT

New line of evaporative coolers and condensers is announced by Air Conditioning & Com. Refrigeration Divisions, General Electric Co., Bloomfield, N. J. It is said to be a radical departure from previous design. The redesign increases the adaptability of the units to essential wartime industrial applications. Outstanding feature is the design of the nested heat transfer coil

(Continued on Page 122)

FOR BETTER CUTTING

Switch to THESE FIRTHITE GRADES FOR BETTER CUTTING AND TO SAVE SCARCE TANTALUM

FOR STEEL CUTTING—These FIRTHITE Tungsten-Titanium Carbide grades stay sharp longer, cut faster, and make smoothest finish. They are described in FIRTHITE Price List FE-105 . . . or, a FIRTHITE Engineer will gladly discuss them in your plant.

FIRTHITE

TITANIUM GRADES FIT "WAR" NEEDS

T-04-HEAVY DUTY
(CONTAINS NO TANTALUM)

FIRTHITE T-04—for coarse feeds, heavy and interrupted roughing cuts. Closest approach to a **universal grade.**

TA-GENERAL PURPOSE
(CONTAINS NO TANTALUM)

FIRTHITE TA—for general-purpose cutting tools on **all** types of **steel** in high-speed production.

T-16-FAST FINISHING
(CONTAINS NO TANTALUM)

FIRTHITE T-16—for light, rapid finishing of **harder** steel, shells, etc.

T-31-PRECISION WORK
(CONTAINS NO TANTALUM)

FIRTHITE T-31—for lightest, fastest, shallow cuts. Recommended for **precision** boring, etc.

Firth-Sterling STEEL COMPANY

Offices: McKEESPORT, PA. - NEW YORK - HARTFORD - PHILADELPHIA - CLEVELAND - DAYTON - DETROIT - CHICAGO - LOS ANGELES

FIRTHITE TUNGSTEN-TITANIUM CARBIDES

When writing Firth Sterling Steel Company please mention Purchasing

Armour's Fibre Combination Sanding Discs Help Get Wartime Jobs Out . . . And Fast!

It'll take you three minutes to read this . . . and it may save your customers plenty of production hours . . .

Because this ad tells you the important points about Armour's Fibre Combination Sanding Discs, and how they fit into the production picture.

These hard, sharp, clean-cutting discs are made with aluminum oxide grains, firmly embedded in vice-like Armour glue on a cloth and fibre backing.

They're designed to cut cleaner, faster, longer.

They're available in the sizes and grades your customers need for the jobs they're turning out right now.

And because rugged performance is built into every Armour Fibre Combination Sanding Disc, they're helping to speed up production right now in important war plants where maximum performance counts!

Today, find out about Armour's Fibre Combination Sanding Discs. Let Armour's Technical Counselors show you what these fast, efficient, long-lived abrasives can mean. Write or call Armour's Sandpaper Works.

Quick Service From Branches In

BOSTON	NEW YORK	PHILADELPHIA	MILWAUKEE
DETROIT	PITTSBURGH	CLEVELAND	INDIANAPOLIS
ST. LOUIS	SAN FRANCISCO	LOS ANGELES	SEATTLE
	HIGH POINT, N. C.	CINCINNATI	

ARMOUR SANDPAPER WORKS

DIVISION OF ARMOUR AND COMPANY

1355 WEST 31ST STREET • CHICAGO, ILLINOIS

(Continued from Page 120)

assembly composed of individual light weight coil sections which are easily removed and disassembled for cleaning or refinishing. Two men can clean single spray cooler section and have it back on the line in two hours.

PLASTIC MONO GOGGLE

This industrial safety mask is made of lumarith. It is light in weight. Offers complete visibility from all angles, yet no particles can fly under or in at the top or sides. Fits over all types of eyeglasses. Can be placed facedown without scratching eye pieces. Comes in clear transparent or pale green tint. Model wears lumarith safety hat. Allsafe Co., Inc., Buffalo, N. Y.

FLAME & ACID RESISTANT

New line of protective clothing for workers, introduced by West Disinfecting Co., 42-16 West St., Long Island City, N. Y., made of new plasticized material, is said to be flame resistant and impervious to most acids, even nitric and sulphuric, as well as resistant to dust, powders and other irritants. It is known as the Durma-Gard line and is claimed to be long wearing, and to be easily washed in soap and water.

SCOOP FOR BULK MATERIALS

New shovel type scoop for attachment to lift trucks for handling bulk materials is announced by Towmotor Corp., Cleveland. Scoop can be interchanged with standard forks. Available in capacities from 8 to 25 cu. ft. Manually controlled, it can pick up or dump materials at any point within the lift range. Anti-spilling device which fits over the front lip of the scoop for handling loose material is optional feature and is easily pulled out of the way for loading.

INVISIBLE "RAIN-COAT"

Invisible "raincoat" which can be formed on cloth, paper and other materials by exposing them to chemical vapors from a new compound, making them water-repellent, has been developed by General Electric's Research Laboratory, Schenectady, N. Y. Its name is Dri-Film. One of its important uses is treating ceramic insulators for radio equipment. It is a clear liquid which vaporizes at a temperature below 100 deg. C. Articles to be treated are exposed

(Continued on Page 124)

SOLID FIBRE . . . AND CORRUGATED BOXES

Gaylord

. . . FOR WAR MATERIALS

Boxes

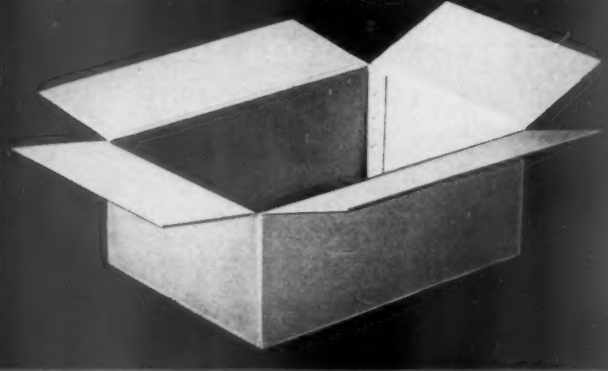
. . . AND CIVILIAN NECESSITIES

Also manufacturers of Grocery Bags and Kraft Wrapping Paper

GAYLORD CONTAINER CORPORATION

General Offices: SAINT LOUIS

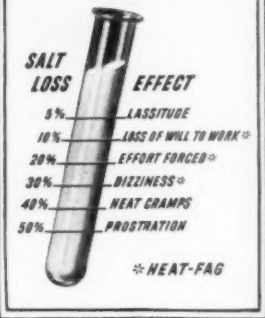
New York • Chicago • San Francisco • Atlanta • New Orleans
Jersey City • Seattle • Indianapolis • Houston • Los Angeles
Oakland • Minneapolis • Dallas • Jacksonville • Columbus
Fort Worth • Detroit • Tampa • Cincinnati • Des Moines
Oklahoma City • Portland • Greenville • San Antonio • Memphis
Kansas City • Milwaukee • Bogalusa • Weslaco • Greensboro



★ BUY MORE WAR BONDS ★

When writing Gaylord Container Corporation please mention Purchasing

This Is What Happens When Sweating Robs the Body of Salt . . .



Keep This Arm On The Job!

Heat-Fag attacks workers who don't replace the body salt lost through sweating. Heat-Fag undermines vitality — destroys the will to work —makes men careless. And, in many cases, it is the direct cause of lost man-hours, absenteeism and accidents.

Heat-Fag is the all-out, unseen enemy of production. Thousands, yes, millions of precious man-hours can be lost through this insidious force that saps men's strength — lowers their efficiency — wears them down before the shift is over. Salt sweated from the body must be replaced — or Heat-Fag takes its toll.

In all leading industrial plants — wherever men sweat and do hot work — salt tablets are a "must".

MORTON'S Heat-Fag SALT TABLETS

QUICK DISSOLVING
(Less than 30 seconds)
This is how a Morton Salt Tablet looks when magnified. See how soft and porous it is inside. When swallowed with a drink of water, it dissolves in less than 30 seconds

Case of 9000, 10-grain Salt Tablets, $2.60
Salt-Dextrose Tablets case of 9000, $3.15

Place MORTON'S DISPENSERS at all Drinking Fountains.
They deliver salt tablets, one at a time, quickly, cleanly — no waste. Sanitary, easily filled, durable.
500 Tablet size - $3.25
1000 Tablet size - $4.00

Order from your distributor or directly from this advertisement . . . Write for free folder.

MORTON SALT COMPANY • CHICAGO, ILLINOIS

(Continued from Page 122)

to the vapors for a few minutes in a closed closet. Coating has high water repellent qualities, and withstands heat (300 C), handling and cleaning.

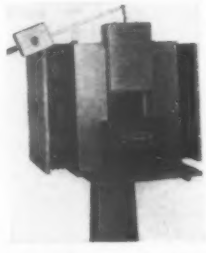
CIRCUIT BREAKER PLUG

New circuit breaker plug made by Hopax Industries, Inc., 1 No. La Salle St., Chicago, replaces conventional receptacle plug, provides protection against dangerous over-load, danger from stalling due to low voltage, locked motors—for fractional horse power motors, power tools, devices using heating, elements, etc. It also protects fluorescent lighting units in case of a short circuit or ground. Plug does not have to be renewed after circuit has been broken—simply reset by raising and lowering the lever.

LIQUID REMOVES INSULATING VARNISH

Sterling S-159 Stripper, for quick removal of insulating varnish from portions of electrical equipment where varnish is not desired, has been developed by Sterling Varnish Co., Haysville, Pa. It is a blue viscous liquid which is brushed on parts prior to actual application of varnish. Dries in two or three minutes after which varnish is applied. Varnish on treated portions is easily removed with wood or bakelite knife without marring or disturbing close tolerances.

HIGH SPEED HARDENING FURNACE



New size high speed steel hardening furnace on pedestal is announced by The Sentry Co., Foxboro, Mass. Size #2 Model "Y" electric furnace has asbestos loading shelf; metal guards prevent accidental contact with live power supply. Shelf is of ample width and depth to permit easy arrangement of several furnace loads.

REFRIGERATED WELDING ELECTRODES

New development in resistance welding electrode design which makes possible full utilization of refrigerated welding is anounced by Frostrode Products, 19003 John R St., Detroit, Mich. Manufacturer states 90% saving in copper normally required for resistance welding electrodes is indicated by use of new "Frostcap" which also eliminates hand or machine dressing of points. Aircraft man-

(Continued on Page 126)

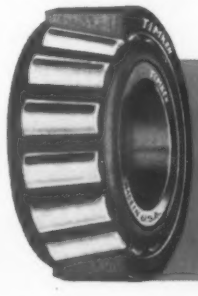
At the Timken plant her friends all call her Toni Cap, but her real name is Antoinette Zahachevski. Yes, her father and mother came from Russia, but Toni was born in America, and is a typical American girl all the way from being a high school graduate to having a liking for high heels, jewelry, basketball and sport clothes. She has one brother in the Signal Corps and another in the Infantry. Perhaps that explains why she gave up stenography to get a job helping to make war material. For Timken factories are 100% on war work.

The machine she is operating in this picture measures ten times more accurately than even the micrometer, that wonderful tool which has always been the symbol of extreme accuracy, thousands of which are in constant use in the Timken factories.

But even the "mike", with its ability to measure to limits of 1/10,000th of an inch, is not accurate enough to control the extreme precision needed for many operations in the making of Timken Bearings. So, today, many a micrometer in the Timken plant has been superseded by almost super-human machines, such as the one Toni is operating in this picture, which can measure to limits of 1/100,000th of an inch. And in the Timken laboratories there are instruments which can measure in terms of one millionth (1/1,000,000th) of an inch.

Precision like that, plus the special Timken-made steel used in Timken Bearings, plus the advantages of Timken Bearing Tapered Design (tapered rollers operating between two tapered raceways) — explain why Timken Bearings by the hundreds of millions are giving unequalled superiority to Uncle Sam's planes, ships, tanks, trucks and gun mounts.

And when happier days come again, those same points of superiority in Timken Bearings, will again be available to serve you so well in your automobiles and trucks, your railroad cars and locomotives, your farm implements, and your industrial machinery and mining equipment of every kind—wherever wheels and shafts turn. The Timken Roller Bearing Company, Canton, Ohio.



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
"ALL THERE IS IN BEARINGS"

When writing The Timken Roller Bearing Company please mention Purchasing

TOP EFFICIENCY with RLM Non-Metallic Reflectors!

Typical Wheeler convenience! Quick, easy access to operating parts by loosening two thumb-screws. Exclusive chain hangers support detached reflector. No loose screws, bolts or nuts to handle.

New "War-Aid" Fixtures insure availability of Wheeler SKILLED LIGHTING for war plants!

In spite of wartime metal scarcity, you can obtain fluorescent lighting fixtures with all the lighting efficiency and convenience of pre-war Wheeler "Skilled Lighting" units. Wheeler's 60 years' experience in better lighting has now produced top-standard "War-Aid" models requiring minimum metal!

Reflectors of "War-Aid" units are rugged non-metallic material. Non-flammable, moisture-resistant. Reflecting surfaces of chip-proof, washable baked enamel provide minimum efficiency of 80% in 48" 2-lamp units; 73% in 3-lamp units; and 73% in 60" 2-lamp units. Available for individual or continuous-run installations.

Write for full details of Wheeler "War-Aid" Fixtures and catalog of Incandescent Fixtures. **Wheeler Reflector Company, 275 Congress Street, Boston, Massachusetts.** New York . . Cleveland. Representatives in principal cities.

Distributed Exclusively Through Electrical Wholesalers

Wheeler REFLECTOR COMPANY

Lighting Equipment Specialists Since 1881

(Continued from Page 124)

ufacturers using "Frostpoint" electrode in "Frostrode" process report increases up of 1000% over refrigeration of conventional electrodes in the number of spot welds which can be made before tips require "dressing."

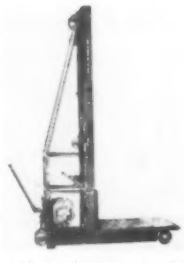
FUME EXHAUSTER

Portable fume exhauster in which fumes, gases, dust, filings and grinding compounds do not come in contact with the motor, is announced by the Chelsea Fan & Blower Co., Inc., Irvington, N. J. Centrifugal type blower wheel is of ⅛" steel. Equipped with 3 h.p. ball bearing motor tested for overload capacity. Framework is welded into strong unit with handles for carrying.

HYDRAULIC PORTABLE TEST STAND

HydrOilic portable test stand, electric motor driven, for testing the hydraulic systems of airplanes and the component parts comprising those systems, is announced by The Denison Engineering Co., Columbus, Ohio. It will check entire system including valves and lines on pressures up to 3000 psi. Working pressures are adjustable over a range of 500 to 3000 psi. Driven by 7½ hp 1200 rpm, 3 phase, 220 volt constant speed motor. Motor equipment can be supplied to meet other electric power conditions.

AIR POWER STACKER



Air power stacker, a portable elevator for use in connection with hazardous operations, is announced by the Lewis - Shepard Sales Corp., Watertown, Mass. Will operate efficiently at same air pressure and volume as industrial overhead air hoists. Produced in standard hinged and telescopic types for safety; upper and lower limit stops automatically operate to prevent over-ride when lifting or lowering.

FULLY WATER-PROOF GLUE

Glu-Weld is the name of a new industrial adhesive developed by the F. G. Findley Co., Milwaukee, Wis., for use with all types of paper stock. It is claimed to be waterproof and climate-proof, odorless and non-inflammable. It is white. Recommended for case sealing, box liners, tube windings and other uses where waterproof glue is required. Absence of sticky or pitchy

(Continued on Page 128)

"Our shipments won't miss the boat . . . we use Western Brass"

GETTING an emergency rush order for newly improved carburetor parts aboard a convoy ship sailing in a matter of hours, can depend entirely upon the quality of the brass being used—upon the speed with which it can be processed.

Western brass is helping to get needed equipment to our fighting forces on time. It is helping to prevent production headaches, keep war wheels spinning. More than any other part of Western service, we value our ability to produce brass that is *right* . . . "tailored" to the job.

Western's reputation has been earned through that kind of performance—now doubly important to the nation. *Tomorrow* it can be an important cog in your peacetime manufacturing.

BRASS
BRONZE
PHOSPHOR BRONZE
NICKEL SILVER

Western
BRASS
PRODUCTS
WESTERN CARTRIDGE COMPANY
EAST ALTON, ILLINOIS, U.S.A.

BRASS MILL DIVISION

Western Cartridge Company
East Alton, Illinois

When writing Western Cartridge Company please mention Purchasing

2 LESS HEADACHES for Purchasing Agents

HOW TO PREVENT CORROSION ON PARTS IN PROCESS

Coat them with NO-OX-ID. There is a light consistency for this very purpose. It does not interfere with inspection. Also many other consistencies . . . some provide an oil type coating of excellent lubricating properties; others set to a dry, wax-like finish. All consistencies are easy to work with and quickly removable when desired. Order NO-OX-ID, and your rust prevention problems will be solved.

HOW TO PREVENT RUST DAMAGE IN DOMESTIC AND OVERSEAS SHIPMENTS

Coat the entire part with NO-OX-ID . . . wrap in NO-OX-IDized Wrapper . . . dip-seal and pack in unit carton placed in shipping case which is lined with NO-OX-IDized Wrapper to form complete water vapor barrier. Your worries on this problem will be over when you adopt this highly efficient method of packing.

"THE LEADER FOR 25 YEARS"

NO-OX-ID IRON-RUST rust preventive

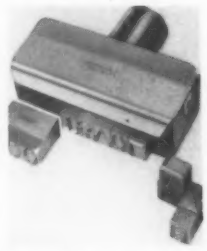
DEARBORN CHEMICAL COMPANY Dept. AA, 310 S. Michigan Avenue Chicago, Illinois

When writing Dearborn Chemical Company please mention Purchasing

(Continued from Page 126)

consistency permits of easy application with brush. Available for war work. Comes in 5 and 10 gallon cans and 50 gallon drums.

INTERCHANGEABLE TYPE



Instead of several heavily constructed marking dies, interchangeable type is used in "Heavy Duty" holder. Time is saved by using insert blocks or dies for numbers or letters that appear in every mark. Type is used for numbers that change with each mark. Large insert dies and type can be used. Size and number of characters is limited only by amount of stamping pressure—35-ton press should be used with holder, type and dies illustrated for stamping structural or machinery steel.

WELDING ELECTRODE ALL-POSITION

Electrode designed specifically for all-position welding of mild steel with A-C type welding machines has been developed by Air-Reduction Sales Co., New York. Known as Airco 230, it complies with all requirements of the AWS E6011, ABS Group H i G and B i G for A-C and other specifications qualifying it for use on war work. It is claimed that average operators have no difficulty in securing good fusion and complete penetration, and that finished weld deposit has smooth uniform surface contour.

FORK EXTENSION ADAPTORS

New fork extension adaptors developed by Towmotor Corp., Cleveland, O., are said to simplify the problem of handling loads of varying dimensions on a lift truck with standard length forks. The adaptors are quickly and easily attached, and make it possible to extend fork lengths safely as much as 24". Adaptor automatically "locks" in position; wide flanges prevent sideway slipping.

FABRIC TREATING COMPOUNDS

Chemical that makes fabrics water and stain resistant, is announced by Fine Chemicals Divn. of E. I. duPont de Nemours, Wilmington, Del. Chemical treatment cannot be seen or felt, has no odor, and does not impair draping qualities of garments, which also retain shape and creases longer. Normal evaporation from body not affected. Aridex-L water repellant is emulsion type which is diluted with water and applied in laundry wheel after wet cleaning or washing. Aridex DCX is solvent type which is diluted with cleannng solvent.

(Continued on Page 131)

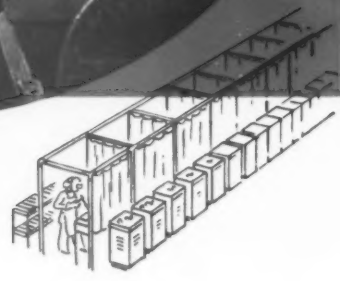
DEADLY MOBILITY
With the speed and smoothness of a tiger turning on its foe, the gun turrets of American planes revolve, to instantly throw a devastating fire in any direction. Remarkable lightness, despite armor where it is needed, allows these turrets to move so rapidly. Added lightness has been attained by the ever broader use of cast magnesium parts such as turret mounts, gun mounts and fittings. On many fronts Howard aluminum, bronze and magnesium castings are playing a real part in making possible such reports as this: "Nineteen enemy planes destroyed. Two of ours failed to return."
At the three Howard foundries we get added inspiration from such war news as we produce an ever-growing volume of cast parts for planes, tanks, ships, guns, ordnance and machine tools for America's great war machine. By the scores alone we know that our efforts are definitely contributing to the fighting supremacy which makes final victory certain.
When you need nonferrous castings, check with Howard first.
For armament today—for utility tomorrow.
Howard Foundry Company
4900 Bloomingdale Road
Chicago
ARMY E NAVY
HOWARD
ALUMINUM · BRASS · BRONZE · MAGNESIUM
CASTINGS

When writing Howard Foundry Company please mention Purchasing

WANTED!

200 WELDING OPERATORS IN 10 DAYS

TANK TREAD SHOES, are now welded on assembly lines by women using Westinghouse a-c welders. Treads are positioned in jigs by helpers and swung into welding booths where 34 inches of downhand welding are applied to each.



"We found the answer in untrained women

. . . and A-C WELDERS," *says Chief Electrician of Large War Plant*

"Production-line welding in 10 days by women operators who never struck an arc before? A few days ago we would have thought it impossible. *Today, it's a fact!*"

So states this official, who has supervised the training of more than 600 women welders, for producing tank tread shoes on seven continuous production assembly lines. The average woman worker quickly learns how to strike an arc and run short beads—from then on she practices, practices, practices welding tank tread shoes. Usually in ten days she is ready for actual production welding (work must pass bend tests)—where her initial work is carefully supervised by her instructor.

"One of the biggest factors that has made it possible—and successful," says this electrical engineer, "has been the use of a-c welders. We bought them originally because they were immediately available, although we had always used d-c.

"We found, however, that the freedom from arc blow made it much easier to develop qualified operators. Weld quality is excellent. Most important, we've had literally no maintenance in nearly a year of 24-hour-a-day average operation."

★ ★ ★

The 275 Westinghouse a-c 500-ampere welders in operation at this plant are just a few of the many Westinghouse welders that are solving problems of availability, ease of operation and freedom from maintenance for many war plants. Ask for booklet B-3136. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

J-21269

Westinghouse A-C WELDERS

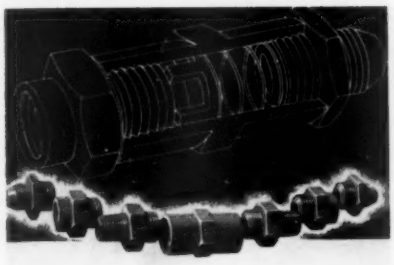
PLANTS IN 25 CITIES... OFFICES EVERYWHERE

When writing Westinghouse Electric & Mfg. Co. please mention Purchasing

(Continued from page 128)

applied in laundry wheel after wet cleaning or washing. Aridex DCX is solvent type which is diluted with cleaning solvent.

TWELVE COMBINATION VALVE

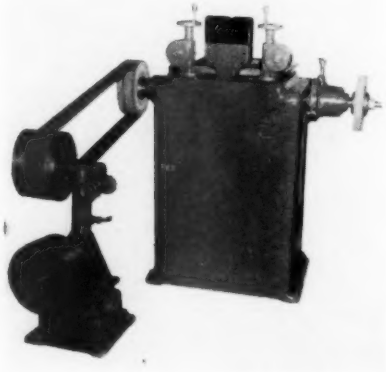


Universal check valve that allows twelve combinations to be made with one body and any two of three types of adapters is being introduced by American Screw Products, Los Angeles. Designed primarily for installation in airplane hydraulic lines, the ASP valve is said to be 16% lighter and to have two to four times increase in flow capacity with corresponding reduction in back pressure. Adapters are available for flared tubing or external and internal pipe threads. Standard body is of heat treated aluminum alloy. Valve is claimed to provide positive protection in critical lines.

WEATHER-TIGHT SEARCH LIGHT

New bug, dust and weather-tight incandescent searchlights for varied industrial uses, are announced by Revere Electric Mfg. Co., 2949 N. Paulina St., Chicago. They are available with 12 and 18 inch lenses, and offer a multiplicity of mounting arrangements to suit any conditions, including pilot house control. Designed for continuous operation with 1500-watt lamps in the 18 in. size and up to 600-watts in the 12-in. size. When used in pilot house, unit is equipped with friction clutch and rotation stop.

SANDING IDLER BACKSTAND

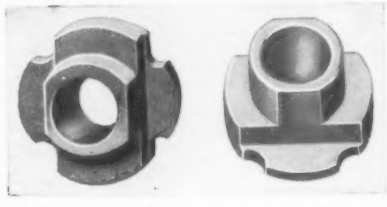


Idler backstand for belt sanding is announced by the Behr-Manning Corp., Troy, N. Y. Amazing results are being obtained in many plants where old-fashioned set-up wheels are being changed over to this modern sanding equipment, it is reported. Among advantages claimed for Idler Backstands and Metalite Cloth abrasive belts are the controlled coating of modern abrasive cloth, the faster dissipation of heat; the range of 15 grit sizes, ease and rapidity of changing belts; reduced loss of abrasive grain and the retention of desired cushion in contact wheels.

FIRE EXTINGUISHER CASE

To reveal instantly any atempt to tamper with fire extinguishers, American-La France-Foamite Corp., Elmira, N. Y., has introduced new inexpensive extinguisher case known as the Tampless Case. It is made of tough cardboard stock. Allows instant removal of extinguisher by quick pull on a sealed string which breaks paper sealing strip. Case can be reused. Instructions on each case show classes of fire for which extinguisher should be used, and kinds of fire on which they should not be used.

POWDER METALLURGY PARTS



Powder metallurgy for the production of small parts of special design and shape which eliminates machining operations and conserves time and materials, is specialty of the Keystone Carbon Co., St. Marys, Pa. Small parts being produced include cams, eccentric parts, levers, rotors, slide blocks, etc. Tolerances not possible by ordinary methods are said to be readily maintained. Process permits use of alloys; porosity and specific gravity can be acquired to exact specifications. Shorter tooling time and quicker delivery are claimed.

TABLE TYPE DUST COLLECTOR

A new, low cost, entirely self-contained, table type dust collector for collecting and storing the dust from one or more flexible shaft grinding, buffing, small band sanding, or metal spraying operations, is announced by Aget-Detroit

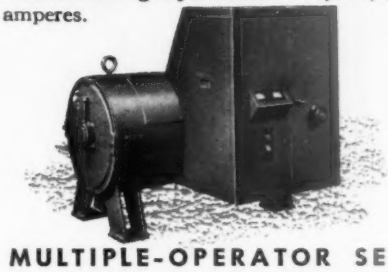
(Continued on page 133)

for
PRODUCTION
A-C WELDING

Whether it's a problem of training new operators quickly or of improving present weld quality, Westinghouse a-c welders, with their freedom from arc blow, can help you. 100, 200, 300 and 500-ampere models. Also 1000-ampere models for use with the Unionmelt process.

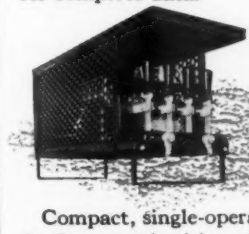
NEW
D-C WELDER with
ARCONTROL

Single, pre-set current adjustment. Lots of capacity to handle all kinds of work. No drop-off after warming up—less lost motion making adjustments. 200, 300, 400 amperes.



MULTIPLE-OPERATOR SETS

Do the work of 20 to 30 single-operator rotating sets. Stationary types for shop operation—semiportable types for use on shipways and similar applications. Ask for complete data.



PORTABLE
TACKING
PANELS

Compact, single-operator control panels for fit-up work with multiple-operator sets. Extra capacity for light tack welding.

Write for latest literature. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

J-21269

Westinghouse
PLANTS IN 25 CITIES... OFFICES EVERYWHERE
WELDERS

FOR YOUR PRODUCT PLANNING DIVISION

a Double Feature

SEYMOUR NICKEL SILVER

ALLOY	Alloy No.	Form	COMPOSITION Approximate Percent Copper	Zinc	Nickel	Lead	Tensile Strength lbs. per sq. in. Hard to Spring	Soft	Elongation Percent in 2" min. Hard to Spring	Soft	Rockwell Hardness No. B Scale, 1/16" Ball Hard to Spring	Soft	Density (Specific Gravity) 4°C	lbs. per cu. in.	lbs. per cu. ft.	Melting Point °F	Elect. Resist. I.A.C.S.	Elect. Conductivity I.A.C.S. 20°C
5%-GRADE A	5	Wire	61.00	34.00	5.00		135,000	50,000	2.	40.	88.	32.	8.64	.312	539	1920	11.1	12.0
10%-GRADE A	10A1	Sheet	67.00	23.00	10.00		109,000	52,000	1.5		87.							9.0
12%	12x1	Sheet	61.00	26.00	12.00	1.00	90,000		5.									
12%	12x1	Rod	61.00	26.00	12.00	1.00	82,000	53,000	7.	40.	90.	35.	8.70	.314	542	1965	15.9	6.3
15%-GRADE A	15A	Sheet	64.00	21.00	15.00		93,000	58,000	5.	36.	94.	37.	8.62	.311	537	1900		
15%-GRADE B	15B	Sheet	58.00	27.00	15.00	1.00	100,000	55,000	2.		80.						16.7	6.0
15%-F.T.	15x1	Rod	60.00	24.00	15.00		85,000		10.		90.	38.	8.75	.316	545	2030	16.7	6.0
18%-GRADE A	18A3	Sheet	65.00	17.00	18.00		100,000	54,000	3.	40.			8.75	.316	545	2030	16.7	6.0
18%-GRADE A	18A3	Wire	65.00	17.00	18.00		120,000	55,000	3.	40.		40.	8.68	.313	541	1940	18.2	5.5
18%-GRADE B	18A4	Sheet	55.00	27.00	18.00		110,000	60,000	2.	45.	95.		8.68	.313	541	1940	18.2	5.5
18%-GRADE B	18A4	Wire	55.00	27.00	18.00	1.00	145,000	62,000	3.	50.							17.6	5.7
18%-F.T.	18x1	Rod	62.00	19.00	18.00		85,000		13.		80.						16.2	6.2
18%-SPECIAL	18A7	Sheet	75.00	7.00	18.00		85,000	50,000	4.	32.	88.	25.	8.83	.319	550	2090		
		Rod	75.00	7.00	18.00		80,000	55,000	7.	45.								
		Wire	75.00	7.00	18.00		115,000	55,000	2.	30.							23.8	4.2
		Sheet	56.00	19.00	25.00		110,000	72,000	4.	30.	94.	60.					12.2	8.2
		Sheet	85.00		15.00		70,000	45,000	3.	30.	83.	34.				2,065	15.4	6.5
		Sheet	80.00		20.00		85,000	50,000	2.	30.	85.	37.5	8.85	.320	552	2100*		

25% 15%-CUPRO NICKEL 20%-CUPRO NICKEL

AVAILABLE IN:	Gage Range (inclusive)	Width Range (inclusive)
SHEET	16-36 B&S	Rods up to 2" Sheets up to 40"
CIRCLES	16-28 B&S	
COILS (STRIP)	16-36 B&S	
WIRE	4-30 B&S	
WIRE (FLAT)	8-30 B&S	
ROD	2"-1/32"	

MISCELLANEOUS

WIRE AND ROD supplied Round, Half-Round, Quarter-Round, Oval, Half-Oval, Hexagon, Octagon, Square, Triangular. or Fancy – tinned or bare.

SHEET AND STRIP in roll finish or Patent Level. Strip tinned if desired.

SEYMOUR PHOSPHOR BRONZE

ALLOY	Alloy No.	COMPOSITION Approximate Percent Copper	Zinc	Tin	Lead	Tensile Strength lbs. per sq. in. Hard to Spring	Soft	Elongation Percent in 2 in. min. Hard to Spring	Soft
GRADE A (Sheet)*	950	95.00		5.00		105,000	45,000	1.5	50
" B (Rod)*	494	94.00		5.00	1.00	61,000	50,000		40
" C (Sheet)*	928	92.00		8.00		112,000	55,000	3	
" D (")*	910	90.00		10.00		115,000	60,000	5	65
PHOSPH. BRONZE (Rod)*	444	88.00	4.00	4.00	4.00	*60,000		20	

*Contain Phosphorus *Small Size Only)

DITTO	Alloy No.	Rockwell Hardness No."F" 1/16" Ball 100 Kg Hard to Spring	Soft	Density or Spec. Grav. 4°C	lbs. per cu. in.	lbs. per cu. ft.	Melting Point °F	Elect. Resist. I.A.C.S.	Elect. Conductivity % I.A.C.S. 20°C
DITTO	950	95	30	8.86	.320	552	1920	6.1	16.5
	494	85						6.0	16.8
	928	98	38	8.80	.318	549		7.8	12.8
	910	100	52	8.76	.316	546		9.4	10.6
	444	75		8.86	.320	552	1830	8.2	12.2

AVAILABLE IN:	Gage Range (inclusive)	Width Range (inclusive)
SHEET	16-36 B&S	Rods up to 2" Sheets up to 40"
BRIDGE PLATES	3/64"-1/8"	
CIRCLES	16-28 B&S	
COILS (STRIP)	16-36 B&S	
WIRE	4-30 B&S	
WIRE (Flat)	8-30 B&S	
ROD	2"-1/32"	
ROD (Welding)		

MISCELLANEOUS

WIRE AND ROD supplied Round, Half-Round, Quarter-Round, Oval, Half-Oval, Hexagon, Octagon, Square, Triangular, or Fancy-tinned or bare.
SHEET AND STRIP in roll finish or Patent Level. Strip tinned if desired.

HUNTING for data these days is expensive. Yet, a good understanding of the possibilities of materials being worked is necessary for best results. So, to save your time, here are the principal characteristics of two Seymour Alloys—long-time stand-bys in peace production, now vital features in war production:

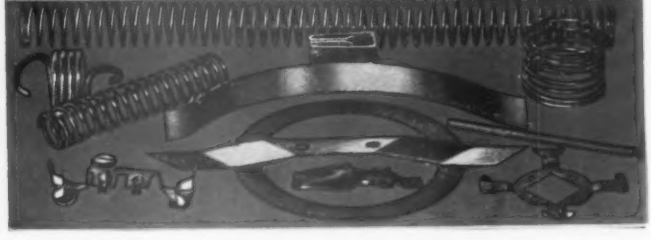
SEYMOUR NICKEL SILVER — Takes any hardness from dead soft to spring temper. Excellent for deep draws and difficult spinning. Has fine grain and good corrosion resistance. Its silvery white color makes it an ideal base for plated items. Leaded, it machines freely.

SEYMOUR PHOSPHOR BRONZE — Highly resistant to corrosion, abrasion, friction and fatigue. Produces springs that withstand almost indefinite flexture. Practically indifferent to thermal variation in most ordinary uses. Has wide application in electrical design. Available leaded; also in rods for welding.

SEYMOUR

Non-Ferrous Alloys Since 1878

THE SEYMOUR MFG. CO., SEYMOUR. CONN.

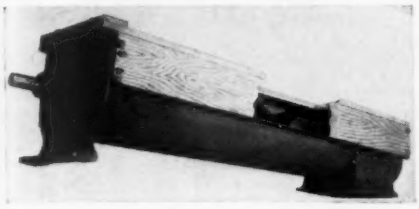


When writing The Seymour Mfg. Co. please mention Purchasing

(Continued from page 131)

operations is announced by Aget-Detroit Co., Book Building, Detroit, Mich. The new unit is named Bench-Kop. It requires no connection with a centralized system or secondary dust collector.

SCREW CONVEYOR TROUGH



Steel-saving screw conveyor trough is announced by the Link-Belt Co., 2410 W. 18th St., Chicago, Ill. It is a combination of steel trough bottom, wooden sides, and wooden cover board, lag-screwed together to form a complete tight enclosure for the screw and the material it conveys. Curved bottom made of steel no heavier than 10 gauge. Readily removed by unscrewing lag screws. New trough is adapted to all standard screw conveyor fittings; will readily connect with existing trough.

AIR COOLED ELECTRODE HOLDER

Lower Tong –Illustrating Air Cooling Feature.

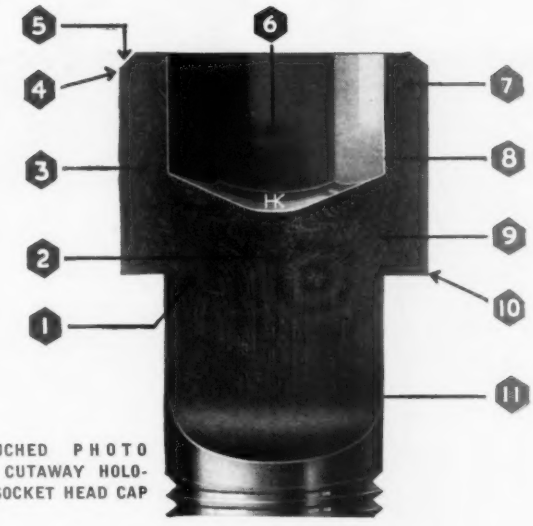
An air-cooled electrode holder for use on heavy metallic arc welding jobs, is announced by Jackson Products, Detroit, Mich. This insulated heavy duty holder is cooled by air at from three to four pounds pressure, traveling the entire length of the lower tong. It is introduced by connecting the air inlet tube to the plant air line. Holder is of special high conductivity copper alloy; deep-slotted jaws grip rod tightly and hold it at correct angle.

TRUCK FOR HANDLING DIES

Hydraulic die handling and stacking truck that is easily converted from a platform truck to a boom truck, to a die separating device and back to a platform truck again, is announced by Lyon-Raymond Corp., Greene, N. Y. Truck is of the cantilever type, capacity 1,000 lbs; platform 25" x 30" long; lowered height 8", elevated height 62"; two-speed hydraulic hand pump; removable die handling boom and removable platform; weight 1075 lbs; 8" roller bearing wheels.

Completely Cold Forged

THE RESULTS OF A SUPERIOR METHOD PATENTED AND USED EXCLUSIVELY BY HOLO-KROME



UNRETOUCHED PHOTO ETCHED CUTAWAY HOLO-KROME SOCKET HEAD CAP SCREW

1—INCREASED STRENGTH.

2—CONTINUOUS UNCUT LATERALLY DEFLECTED CORE FIBRES.

3—CONTINUOUS UNBROKEN FIBRES.

4—SMOOTH FLAT TOP WITH SLIGHT CHAMFER.

5—CONCENTRICITY OF HEAD WITH BODY.

6—SOCKETS—UNIFORMLY ACCURATE TO FULL DEPTH OF HOLE—TRUE HEXAGONAL SHAPE—ACROSS FLAT SECTION DIAMETER IDENTICAL TOP AND BOTTOM—NO TAPER—SMOOTH REGULAR WALLS — WELL DEFINED CORNERS

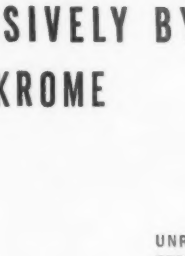
7—CONTINUOUS FIBRES ENDING IN SOCKET WALLS.

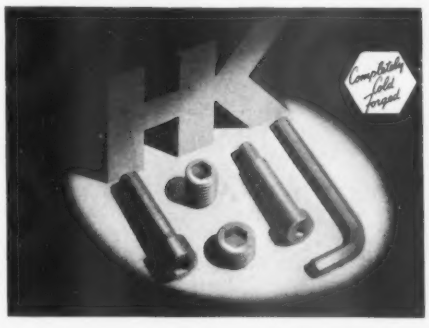
8—RE-INFORCED SOCKET WALLS.

9—CONTINUOUS UNCUT FIBRES.

10—SQUARE SHOULDERS.

11—ORIGINAL CONTINUOUS FIBROUS STRUCTURE.

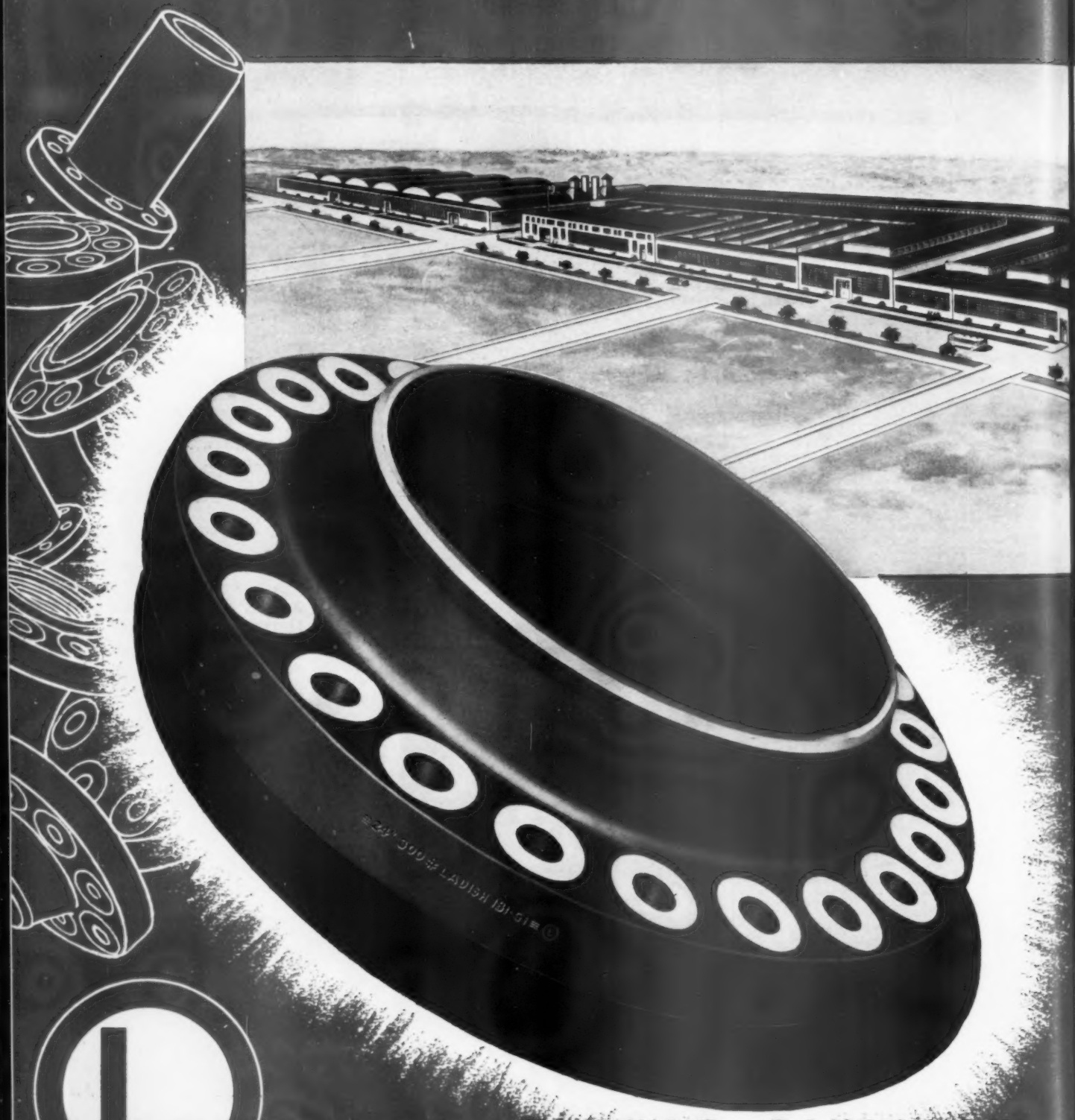




HOLO-KROME fibro forged SOCKET SCREWS

THE HOLO-KROME SCREW CORP., HARTFORD, CONN., U.S.A.

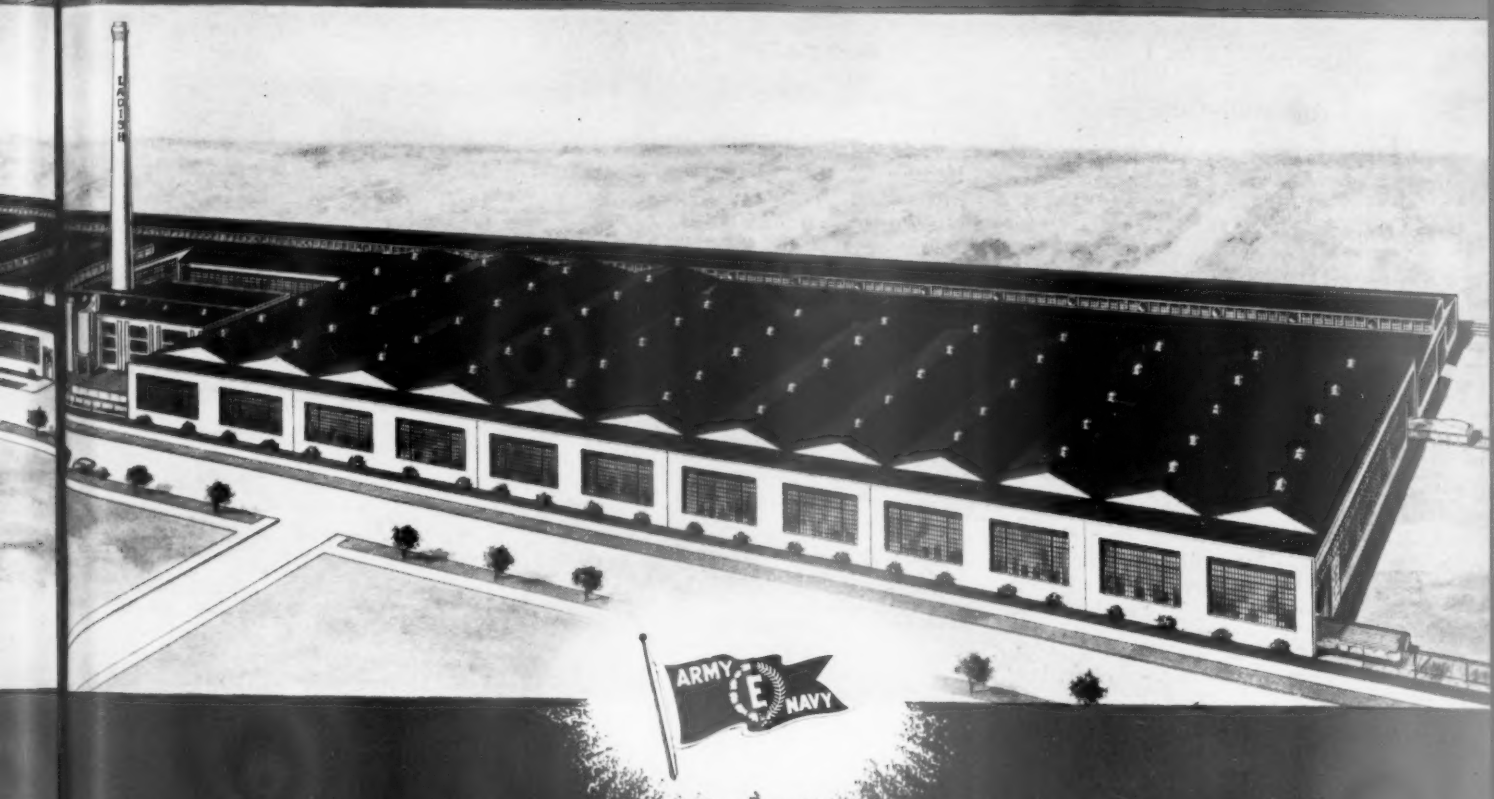
Effective



FLANGE DIVISION

. TO MARK PROGRESS

July 15th



• After many years of marketing its forged steel flanges through one exclusive sales organization, AMERICA'S LARGEST PRODUCER OF FORGED STEEL FLANGES will sell through its own sales and distributing organization, beginning July 15, 1943.

•

DISTRIBUTORS . . . Limited territories will be available.

LADISH DROP FORGE CO.

PLANT AND GENERAL OFFICES: CUDAHY, WISCONSIN

MILWAUKEE SUBURB

Among the ASSOCIATIONS

Admit Nine New Members at Philadelphia

Nine new members were formally introduced at the April 8th meeting of the Purchasing Agents Association of Philadelphia, which was held in the Bellevue-Stratford Hotel. Executive Secretary Harold I. Patten announced that the total membership of the association is now 318, making it the third largest of the local purchasing agent groups affiliated with the National Association.

However, it is with deep regret that the association records the passing of its oldest and one of its charter members—W. W. Whitney, purchasing agent, Berwind-White Coal Mining Company. Mr. Whitney served as secretary of the group for many years and was consistently regular in attendance at the meetings until March of this year. He was 84 years old.

The forum meeting in the late afternoon was devoted entirely to a discussion of CMP regulations, with L. Levick Harrison, Priorities Manager, and J. M. Leonard, Supervising Analyst, War Production Board, Philadelphia, explaining new developments and answering questions from the floor. H. F. Jones, chairman of the Forum Committee presided at this session, during which plea was made for patience in the administering of CMP rules and regulations for two or three months will elapse ere the "bugs" are finally eradicated in the transition from PRP to CMP.

The dinner meeting, presided over by President E. B. Avers, Jr., was featured by a talk by T. R. Ybarra, radio commentator, journalist, and authority on Latin American affairs. His subject was "Latin America", and in the course of his talk he made a plea for greater understanding of our neighbors to the South, and for a more friendly attitude toward them. "At present we are on top", he said. "The Germans, Italians and Japanese have been largely swept off the map. We have taken their place in trade and in other directions. We must plan intelligently to maintain the position we have. If, after the return of peace, Germany is still in existence, Japan still functioning, and Italy still erect, then all three of them will look to new horizons in the countries south of us. We must be ready for them. It is a lucky thing for us that our "Good Neighbor" policy came before Pearl Harbor and not after. It has come nearer to making the South Americans more friendly to us than any other policy we have adopted. Our biggest difficulty has been that we want to sell them things that they want to buy, but we do not want to buy things that they want to sell. In trying to do business with them, Americans think too much of making profits and too little of making friends. We must understand that Latin-Americans are human beings like ourselves, and adjust ourselves on the middle ground of the human approach."

Mr. Ybarra's talk was followed by a showing by the U. S. Coast Guard of movies of naval and plane warfare in the Pacific, and activities in North Africa.

CENTRAL NEW YORK ASSN. HAS SILVER ANNIVERSARY

Members of the Purchasing Agents Association of Syracuse and Central New York celebrated the silver anniversary of their association at a festive meeting April 27, held in the Roof Garden of the Onondaga Hotel, Syracuse. An elaborate program was developed for the occasion by a special committee under the Chairmanship of Vice President F. S. Thompson. Past presidents and secretaries were honored and charter members of the association were presented with silver mementoes. A meeting of the association on March 30 was given over to a discussion of CMP regulations.

HABERKERN ON WEST COAST

President Roy C. Haberkern of the National Association was honor guest and chief speaker at a special dinner meeting given by the Purchasing Aegnts Association of Washington, March 30, and on April 1 was in Portland where he was honor guest and speaker at a special meeting called by the Purchasing Agents Association of Oregon.

JAPANESE AMERICANS SUBJECT AT TWIN CITY MEETING

Warrant Officer Gerald Kobayashi of the United States Army Forces at Camp Savage, principal speaker at the April 14 meeting of the Twin City Association of Purchasing Agents, presented the subject "Americans of Japanese Descent." The entertainment portion of the program was by a group of instrumentalists under the leadership of Mr. Otto Japs.

C. M. P. AT BRADFORD, PA.

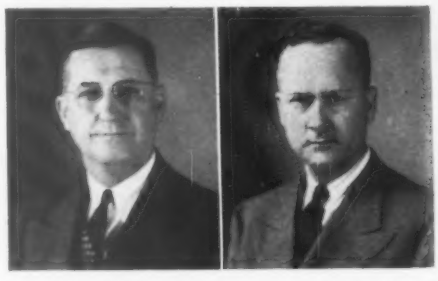
H. G. Erwin, representative of the War Production Board, Erie, Pa., discussed new CMP regulations at the April 1 meeting of the Purchasing Agents Association of Northwestern Pennsylvania, which was held in the Emery Hotel, Bradford, and was the focal point in a general questions session. F. W. Wodrich was appointed National Convention Chairman for the association. H. L. Kaness of the Knox Glass Assn., Oil City, Pa., made a report on the glass containers situation, and Tom Servatius of the Northeast Container Corp., Bradford, talked on the paper market.

LAYER INSTALLED AS PRESIDENT OF HOUSTON ASSOCIATION

D. M. Layer, who was recently inaugurated presideent of the Purchasing Agents Association of Houston, has served the association in various capacities. He was a director of the group in 1938, and the next year did a "most satisfactory job" as chairman of the publicity committee, and was re-elected director in 1941. The early part of 1942 he was made alternate national director, and in November of that year was made secretary of the association. He is secretary and treasurer in charge of Purchases for the Dunlay-Armand Company.

D. M. Layer, President, Houston Assn.

Charles W. Dabney, Jr., the new vice-president, is Purchasing Agent for the Champion Paper & Fibre Company, a position to which he was appointed in 1936. He has served on the program committee of the association, and in 1942 was elected second vice-president, and chairman of the civic committee.



W. J. Peddie, Treasurer, and S. L. Dodson, Secretary, Houston Assn.

Earl R. Cobden, second vice president, has been in charge of Purchases for the Hughes Tool Co. of Houston for a number of years. He was a member of the association's plant visitation committee in 1941 and the standardization committee in 1942, and is reported to have "always delivered 100% on any assignment that has been given to him".

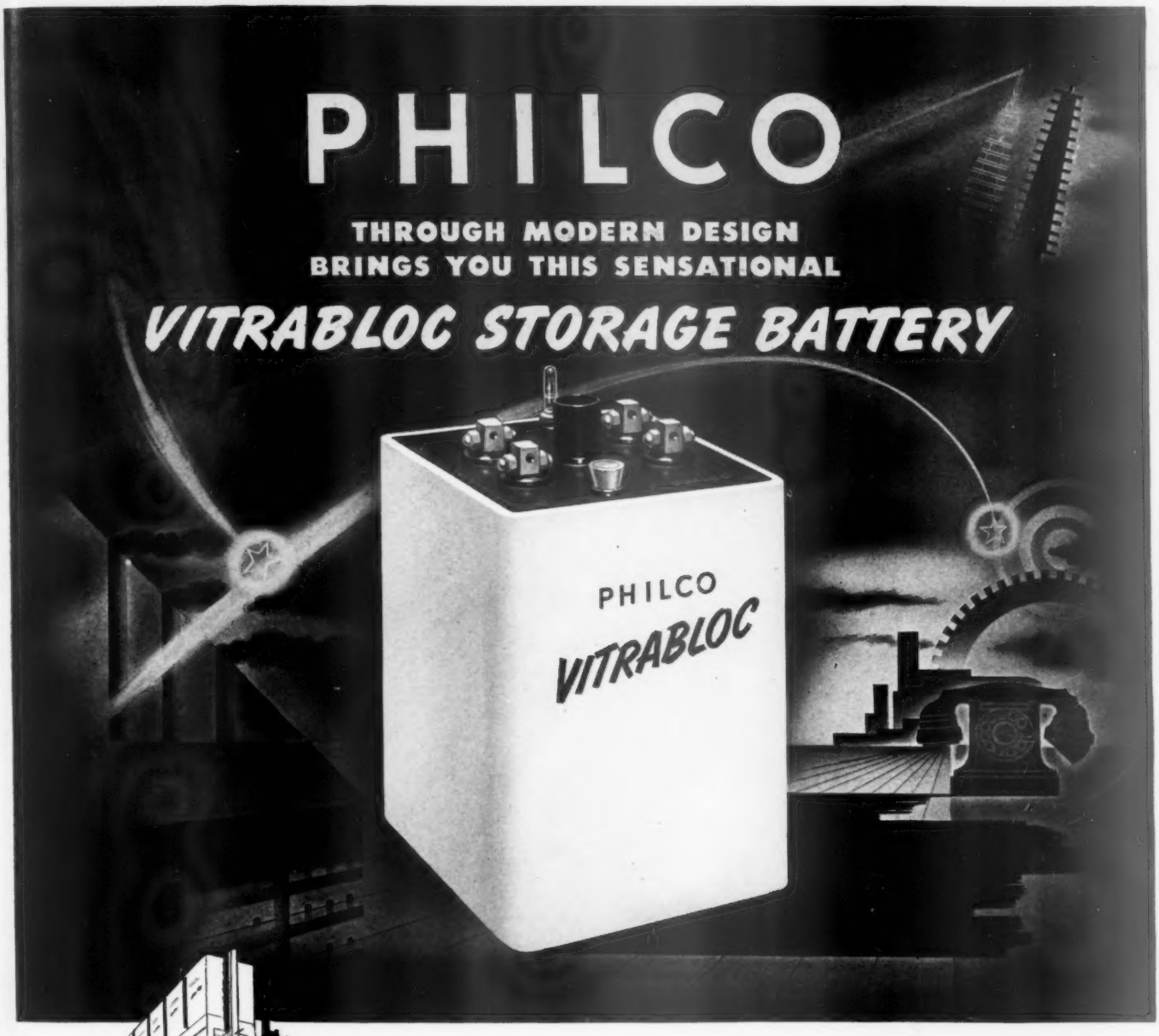
W. J. Peddie, treasurer, has served on many committees. He is said to be one of

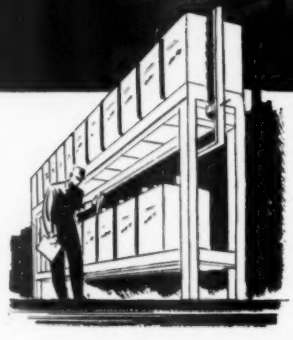
(Continued on page 139)

PHILCO

THROUGH MODERN DESIGN
BRINGS YOU THIS SENSATIONAL

VITRABLOC STORAGE BATTERY





Philco Floté in Vitrabloc is the most attractive industrial storage battery ever made. Pure white, highly glazed, Vitrabloc brightens dark battery rooms.

FOR CONTROL, STAND-BY AND TELEPHONE SERVICE

Even in peacetime, Philco Vitrabloc would be a tremendous advance in storage battery construction. Today, when batteries must do a bigger job . . . when critical materials are a problem—Vitrabloc is a truly sensational development!

Philco Vitrabloc batteries give you greater capacity without increase in battery space. Vitrabloc incorporates the exclusive Philco Floté principle, the only construction specially designed for modern, full float service. Vitrabloc cells are explosion-proof and spray-proof.

Best of all, no critical materials are used in this vitrified ceramic jar! You can get Philco Vitrabloc batteries on exceptionally low priority!

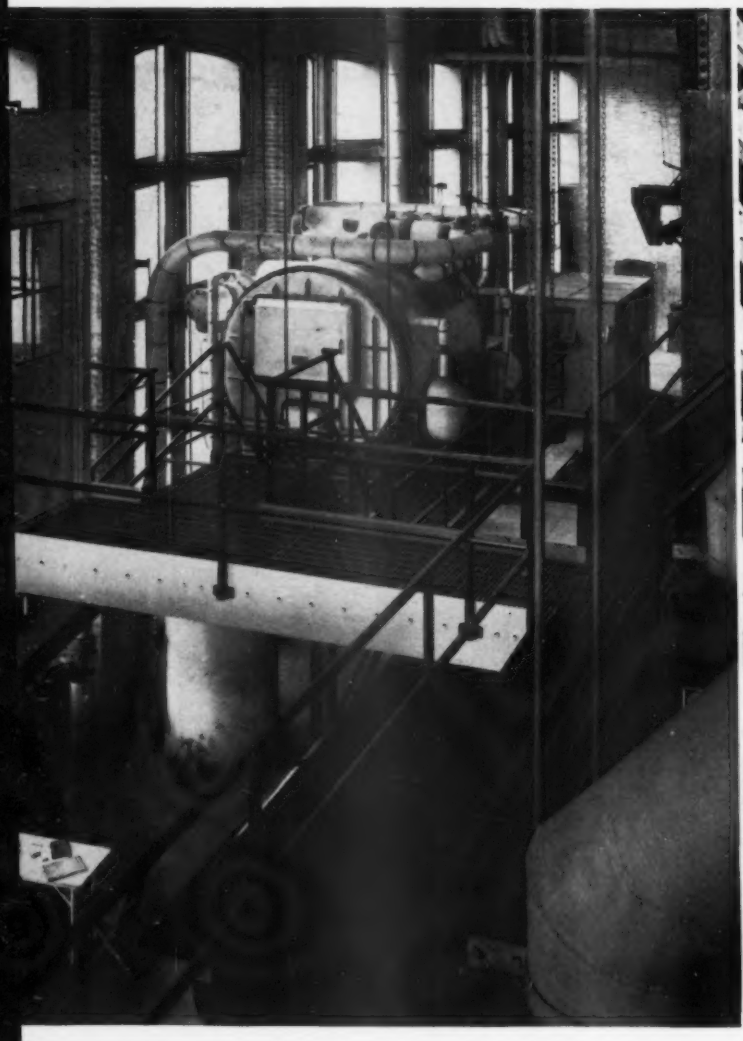
For advanced engineering and construction in industrial batteries, specify Philco! Call your local Philco Battery representative . . . there's one in every important industrial center!

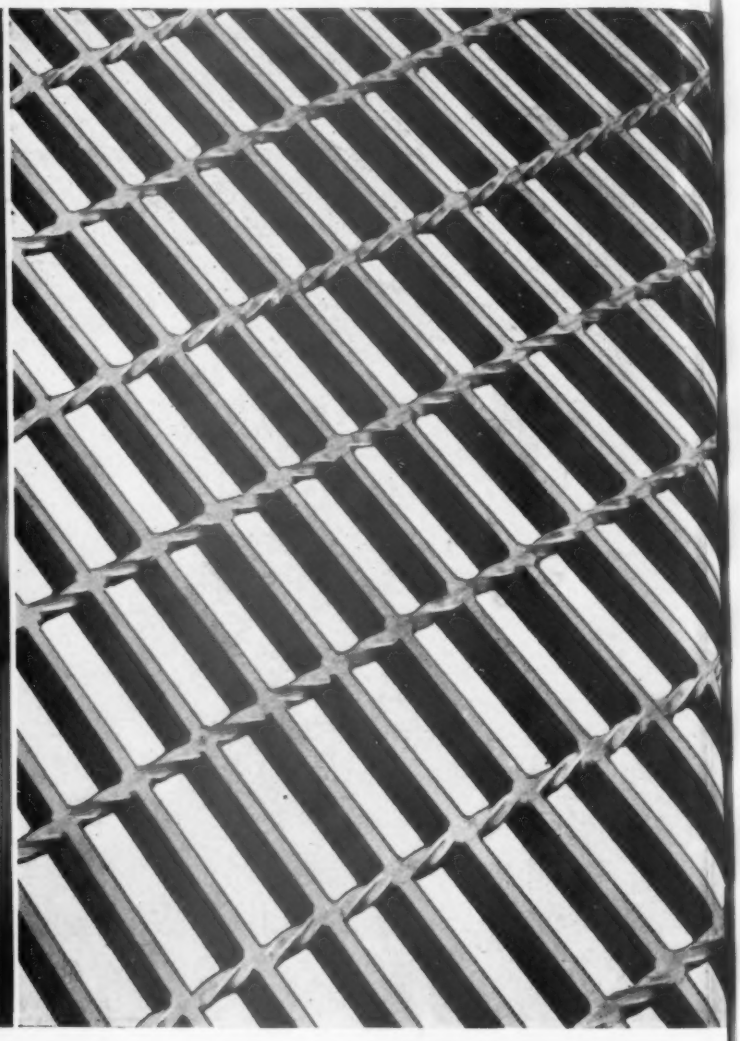
PHILCO CORPORATION, STORAGE BATTERY DIVISION, TRENTON, NEW JERSEY

REPLACE WITH RUGGED, HIGH-CAPACITY PHILCO BATTERIES

When writing Philco Corporation please mention Purchasing

ON THE GROUND...OR HIGH ON A CAT-WALK
THE TWISTED BAR MEANS SAFETY





SAFE, because the twisted bar prevents slipping . . . and STRONG, because it's electroforged into one solid piece. Whatever your grating needs, you can depend on Blaw-Knox!

BETTER . . . 5 WAYS

1 Self-cleaning, no sharp corners to clog.

2 Maximum open area for light and air.

3 Easy to maintain . . . paint reaches entire surface.

4 Strong electroforged construction means easy erection.

5 Safe footing at all times . . . with twisted cross bar.

A Catalogue and paper weight size sample will be sent upon request made on a firm letterhead.

BLAW-KNOX STEEL GRATING

BLAW-KNOX DIVISION OF BLAW-KNOX CO
2075 FARMERS BANK BLDG. · PITTSBURGH, PA.
NEW YORK · CHICAGO · PHILADELPHIA · BIRMINGHAM · WASHINGTON
Representatives in Principal Cities

(Continued from page 136)

those executives to whom it is the custom to refer tough assignments. He is vice-president of the Maintenance Engineering Corporation, in charge of Purchases.

Secretary S. L. Dodson has served on the association's publicity committee. He has been in charge of Purchases for the Great Southern Life Insurance Company since 1935.

The membership of the association totals 114, and boasts a Priorities Information Committee which is said to consist of some of the best informed Purchasing Agents in the country.

WEST POINT PRESENTED BY PICTURE AT NEW ORLEANS

A sound motion picture entitled "West Point Symbol of our Army" was presented at the April 6 meeting of the Purchasing Agents Association of New Orleans by Lieutenant Colonel Calvin L. Whittle, Transportation Corps, U. S. Army. Colonel Whittle graduated from the United States Military Academy in 1927. He served in the Philippine Islands for two years, and was also on temporary duty in Guam, China and Japan.

The association's nominating committee has amended ticket selected by it in March. The candidates are:

Paul E. Oliver, President.
Fred E. Lind. 1st Vice President.
Robert Dowling, 2d Vice President.
G. A. Lyncker, Treasurer.
F. J. Basile, Secretary.
J. A. Weigand, National Director.
A. J. Nelson, Alternate National Director

NOMINATIONS PRESENTED TO NEW ENGLAND ASSOCIATION

The nominating committee of the New England Purchasing Agents Association, W. S. Randall, chairman, has presented the following slate for the coming year to be voted upon at the annual meeting of the association which is to be held May 10:

President, Henry G. Saumsiegle, City of Waltham.

Vice President, Ralph D. Berry, Davol Rubber Co., Providence.

Treasurer, Frank G. Kennedy, Simplex Wire & Cable Co.

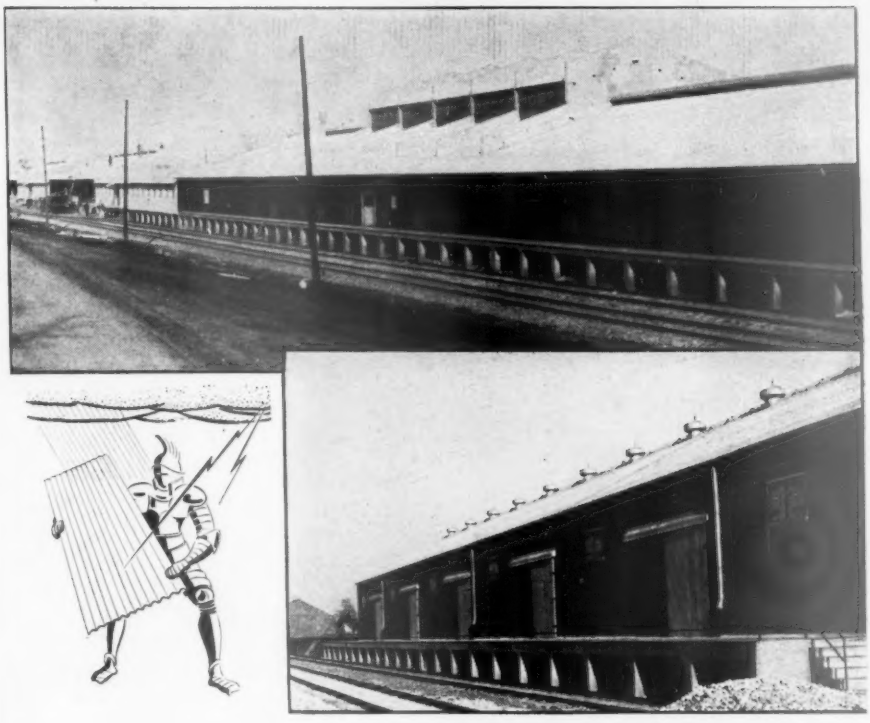
Directors for two years: Kendrick Burns, S. D. Warren Co.; Frank J. Shea Boston Gear Works, Inc.; Leland D. Wooding, United Farmers Co-operative Creamery association.

Director for one year: Leo Cotton, Ben Burk, Inc.

National Director, George J. Cronin, Commonwealth of Massachusetts.

At the April 12 meeting of the association, George H. Krell, member of the Regional Compliance Division of the WPB discussed the subject "What Records Should You Keep for the War Production Board"?, and answered questions of the informational type. At the evening meeting, the speaker was Lieut. Commander Alfred D. Magnell, U.S.N., who

(Continued on page 145)



Architect Engineer: The H. K. Ferguson Co.
Contractor: The Ferguson-Oman Co.

UNCLE SAM gets BOTH

FIRE and WEATHER PROTECTION

with Careystone
CORRUGATED ROOFING AND SIDING

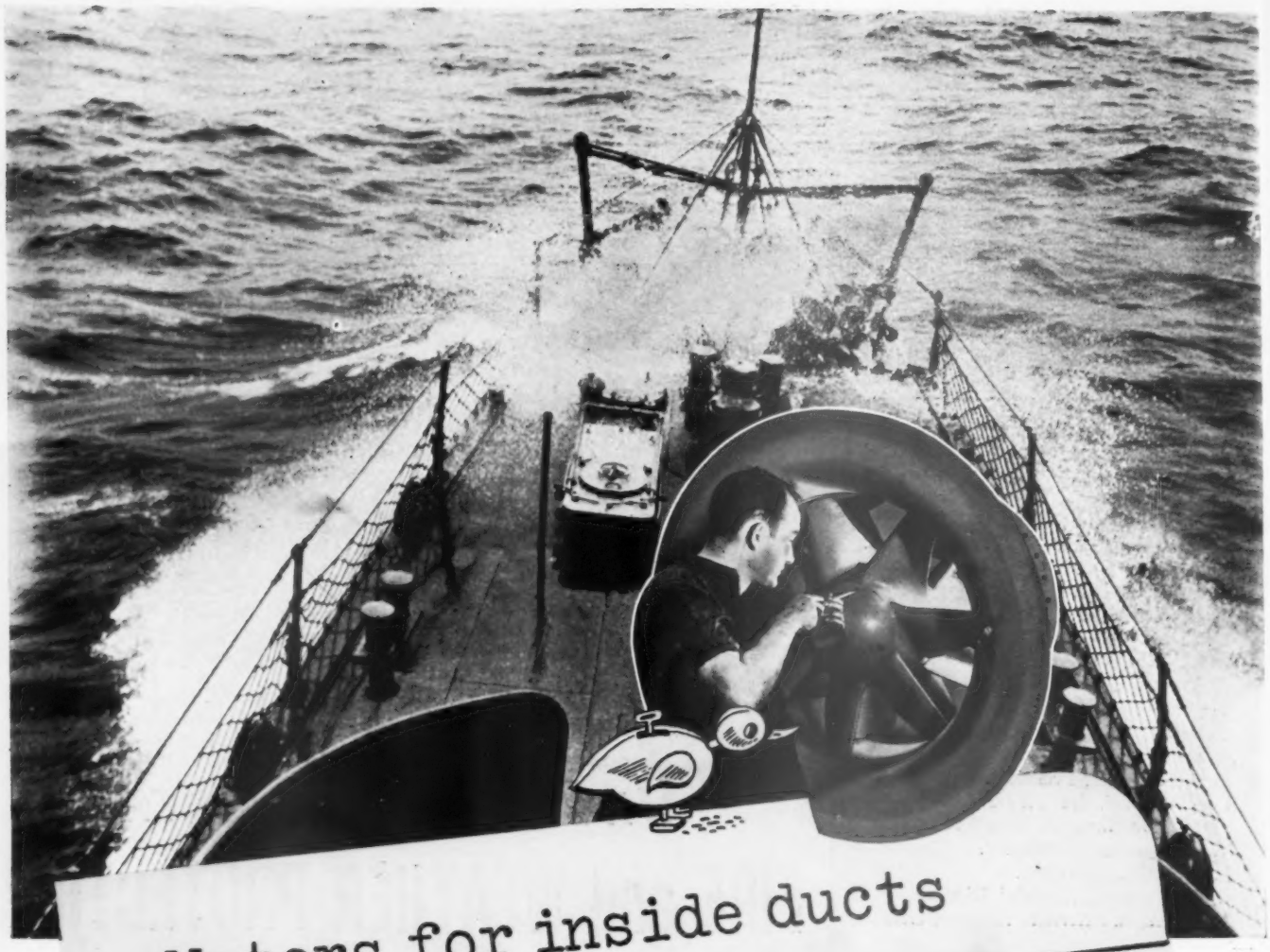
● Many ammunition storage and shipping buildings of important ordnance plants are roofed with Careystone Corrugated—an asbestos-cement material that defies both fire and weather—a product ideally suited to the hazards inherent in the production and handling of high explosives.

Careystone Corrugated Roofing is strong and rigid, and not subject to appreciable wear. It is relatively reasonable in cost and the large sheets are rapidly applied, effecting a saving in labor. When desired for temporary structures, its strength allows dismantling with little or no breakage and re-using in other locations.

While practically the entire production of Careystone Corrugated is now going into war construction, its outstanding qualities merit first consideration by industry when peace comes. Further information and specifications will be sent on request. Address Dept. 68.

THE PHILIP CAREY MFG. COMPANY
Dependable Products Since 1873
LOCKLAND, CINCINNATI, OHIO
IN CANADA: THE PHILIP CAREY COMPANY, LTD. Office and Factory: LENNOXVILLE, P. Q.

When writing The Philip Carey Mfg. Company please mention Purchasing



Motors for inside ducts

IT'S WEATHER FOR EMERGENCY LIFE-LINES ON DECK THIS DESTROYER...BUT BELOW, CREW AND OFFICERS WORK IN COMFORT. SPECIALLY DESIGNED WESTINGHOUSE BLOWER MOTORS IN DECK DUCTS SUCK IN SEA AIR...CIRCULATE IT THROUGH A MAZE OF DUCTS FOR SHIP VENTILATION.

THESE COMPACT MOTORS AND FANS, BUILT AS AN INTEGRAL UNIT, FIT INSIDE DECK DUCTS. STURTEVANT DESIGNED THE VENTILATOR; WESTINGHOUSE — THE MOTOR. EACH UNIT MUST WITHSTAND THE GUN SHOCK AND POUNDING OF A SEA AND AIR BATTLE. IN ADDITION TO SAVING VALUABLE DECK SPACE, THIS SPECIAL MOTOR INCREASES VENTILATING EFFICIENCY MORE THAN 15% AND REDUCES NOISE LEVEL BY 25%.

SIMILARLY, MANY OTHER MOTOR AND CONTROL APPLICATIONS IN WAR INDUSTRIES REQUIRE SPECIALIZED ENGINEERING...CO-ORDINATION FOR FINISHED UNIT BETWEEN A WESTINGHOUSE PRODUCT AND YOURS.

USE OUR FACILITIES. ABOVE ALL, TAKE ADVANTAGE OF OUR MOTOR AND CONTROL APPLICATION EXPERIENCE. PHONE YOUR NEAREST WESTINGHOUSE OFFICE FOR IMMEDIATE HELP. OR WRITE WESTINGHOUSE ELECTRIC & MANUFACTURING CO. — DEPT. 7-N — E. PITTSBURGH, PA.

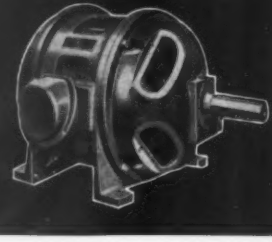
J-21276

WESTINGHOUSE

Westinghouse

PLANTS IN 25 CITIES OFFICES EVERYWHERE

MOTORS AND CONTROL



When writing Westinghouse Electric & Manufacturing Co. please mention Purchasing

IF TONNAGE DOESN'T MOVE SOLDIERS CAN'T FIGHT!
CLARK FORK TRUCKS roll off the production lines night and day to move the material for our armed forces in this life and death struggle.
Built in capacities of 1000 to 7000 lbs. — gas or battery powered.
CLARK Fork Trucks release manpower, by saving time in the handling of material.
On the Docks
In the Yards
In the Factories
On the Air Fields
In the Warehouses
ARMY E NAVY
ON THE WHEELS OF CLARK MATERIALS ROLL
CLARK TRUCTRACTOR
DIVISION OF CLARK EQUIPMENT COMPANY
BATTLE CREEK, MICHIGAN, U.S.A.

COMPLETE GRINDING WHEEL SERVICE

for the Tool Room

A Few Suggested Specifications for Tool Room Wheels

CUTTERS — Milling cutters (plain, side, face, etc.)
- Straight or Cup wheel . . . . 3846-K5BE or 3846-I12BE*
- Ingersoll Cutter Grinder . . . 3846- J5BE or 3860-I12BE*

Formed cutters (gear, hobs, etc.)
- Dish wheel . . . . . 3846- J5BE or 3846-I12BE*
- Barber-Coleman hob grinder . . . . . 3860- J5BE or 3860-I12BE*

REAMERS
- Cylindrical grinding 50-L5BE
- Backing-off 3846-K5BE

DRILLS — Sharpening (offhand)
- Large drills 36-P5BE
- Small drills 60-N5BE

Sharpening (machines)
- Large drills 46-L5BE
- Small drills 3860-K5BE

Point thinning 60-N5BE
Cutting-off 60-M4L

TAPS
- Grinding chamfer 3860-L5BE
- Cutting-off broken ends 60-M4L

BROACHES — Sharpening (face grinding)
- Dish wheel . . . . . 3880-K6BE or 3880-J12BE*

Backing-off
- Cup wheel 3860-L5BE

THREAD CHASERS — Milled and Tapped Chasers
- Grinding chamfer (or throat) 3846-K5BE
- Grinding cutting face . . . . . 3846-K5BE or 3860-J12BE*

Tangent chasers
- Straight wheel 3860-K5BE
- Cup wheel 3846- J5BE

Circular chasers
- Straight wheel 3860-K5BE
- Cup or dish wheel 3846- J5BE

TOOLS (Lathe and Planer) — Offhand grinding
- Bench and pedestal grinders (coarse) 36-O5BE
- Bench and pedestal grinders (fine) 60-N5BE

Wet tool grinders
- 12 to 24" diameter 30-O5BE
- Over 24" diameter . . . . . 24-PS(silicate) / 24-M5BE

Machine grinding
- Sellers 15" diameter 36-L5BE
- Sellers 24" diameter 24-L5BE
- Gisholt 24-L5BE

SURFACE GRINDING — Hardened steel
- Straight wheel (dry) . . . . . 3846-H8BE or 3846-H12BE*
- Straight wheel (wet, fast traverse) . . . . . 3846-J5BE or 3846-J12BE*
- Cup wheel (wet) . . . . . 3830-H8BE or 3830-H12BE*

SURFACE GRINDING — Annealed steel
- Straight wheel (dry) . . . . . 3846-I8BE or 3846-I12BE*
- Cup wheel (wet) . . . . . 3824-I8BE or 3824-I12BE*

CEMENTED CARBIDE TOOLS AND CUTTERS

Lathe and Planer tools

Offhand grinding
- Roughing (straight wheel) 3760-J7
- Roughing (cup wheel) . . . . . 3760-I7 / 100-M100 (diamond, metal bond)
- Finishing (cup wheel) . . . . . 37100-H7 / 220-B50 (diamond)
- Comb. rough and finish . . . . . 120-M100 (diamond, metal bond)

Machine grinding
- General purpose (straight wheel) 3760-J7
- General purpose (cup wheel) 3760-I7

Surface grinding (straight wheel) . . . . . 3760-I7 / 100-B100 (diamond)

Cutter grinding
- Roughing . . . . . 3760-I7 / 100-B100 (diamond)
- Finishing . . . . . 37100-H7 / 220-B100 (diamond)

Hand Stoning
- Diamond hone . . . . . 220-B100 (diamond)
- Crystolon stick 37280-N

*Use the No. 12 (open) structure wheel for extra heavy stock removal or extra coolness of cut or both.

The Right Wheel for Each Job

Local Engineering Service

Informative Literature and Films

For High Speed Steel Tools

Alundum and 38 Alundum "B-E" bond grinding wheels for sharpening tools and cutters of high speed steels and Stellite.

Open Structure grinding wheels for the jobs that require extra heavy stock removal or extra coolness of cut or both.

Fine grit grinding wheels for producing the high surface finish that greatly lengthens cutting tool life.

For Carbide Tipped Tools

Metal bonded diamond wheels for the off-hand grinding of single point cemented carbide tools.

Resinoid bonded diamond wheels for sharpening multi-blade carbide tools such as milling cutters and the like.

Crystolon vitrified wheels for many roughing operations and for plants doing only a limited amount of carbide grinding.

For Dies and Molds

Mounted Points and Mounted Wheels are available in nearly 200 standard sizes and shapes in several abrasives and bonds.

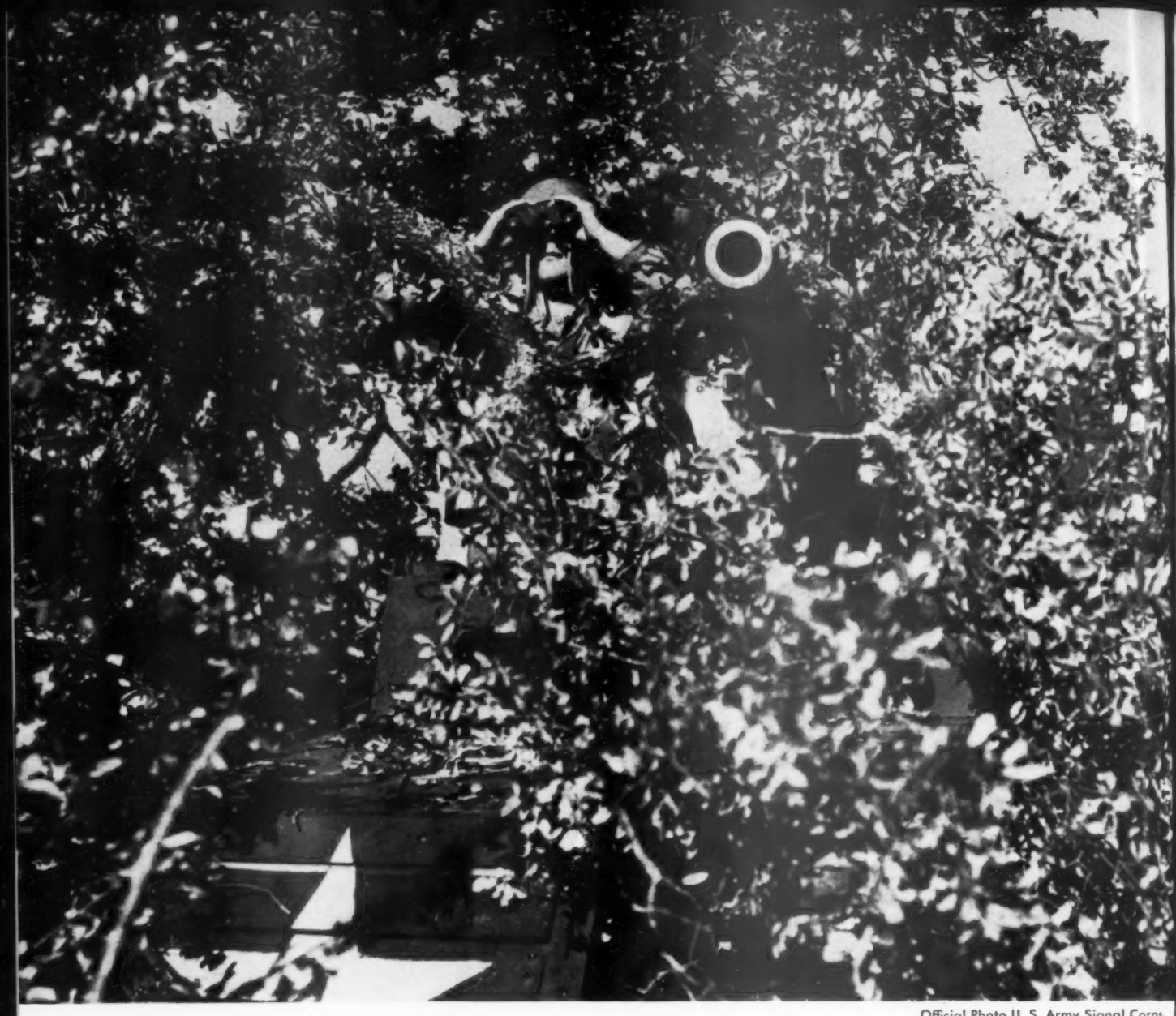
Norton Open Structure wheels are especially effective for the surfacing of heat sensitive die steels.

For engineering service and informative technical literature on tool room grinding, or any other grinding service, write direct or contact your Norton distributor.

NORTON COMPANY, WORCESTER, MASS.

Distributors in All Principal Cities

NORTON ABRASIVES



Official Photo U. S. Army Signal Corps.

POKING OUR SNOUT IN HITLER'S BUSINESS

Whether it's a rapid-firing 75 mounted on a tank, or the stinging tail-end of a Flying Fortress . . . *you can bet your bottom dollar* it's interference that Mr. Schickelgruber could do without! For our planes, tanks and guns in the hands of our boys and our allies have put a serious crimp in the Axis.

American production is the bulwark behind the Allied Nations. And, Ball Bearings *keep the wheels turning* . . . ever faster and steadier. Ball Bearings help to make high-speed grinding and boring machines possible. They help to spin the yarn and weave the cloth that clothes our armies. They're working on machines that produce bullets, helmets, rifles, pistols, bayonets, goggles, shoes, parachutes, mess kits, and everything else a fighting man needs. Every week, more millions of Ball Bearings go on the job . . . you can understand why our stocks are often low. The Fafnir Bearing Company, New Britain, Conn.

FAFNIR

BALL BEARINGS

(Continued from page 139)

discussed the work of the Navy Supply Corps School and its relation to the war effort. The Lieutenant is commandant of the Navy Supply Corps School at Harvard.

Dollars-and-Cents pricing for heavy steel products was the subject of a special talk April 8 at Ford Hall, Boston, by E. L. Wyman, head of the Warehouse and Jobbers' Section of the Iron and Steel Price Branch of the O. P. A. Washington.

TWO-DAY CONFERENCE AT CINCINNATI

A two-day conference of Purchasing Agents from Ohio, Western Pennsylvania, West Virginia and Kentucky (6th District, National Assn.) was held April 9 and 10 at the Hotel Netherlands Plaza, Cincinnati, Ohio, under the auspices of the Cincinnati Association of Purchasing Agents. The regular monthly dinner meeting of the local group was incorporated in the conference. Among the speakers were W. Emmet Bittner, Pittsburgh, vice president of the 6th district, and George A. Renard, National secretary.

UTAH ASSOCIATION APPOINTS NOMINATING COMMITTEE

S. W. Mote is chairman of a nominating committee appointed by the Purchasing Agents Association of Utah, to select a slate for the forthcoming election. Other members of the committee are David H. Thomas and D. V. Shurtliff. Members of the association are giving serious attention to the industrial development of the state. In the past two years there have been 45 separate huge installations costing $600,000,000 for construction alone. These include military, defense plant, corporation and private capital enterprises. Members of the association are saving magazines and books for the Bushnell Hospital at Brigham City, two sizeable deliveries having been made to date.

"THE POST WAR WORLD" AT NEW HAVEN

"The Post War World" was the topic of Curtiss S. Johnson, editor and publisher of "Shore Line Times" Guilford, Conn., at the March 23 meeting of the Purchasing Agents Association of Connecticut which was held at the Union League Club, New Haven. The April meeting of the association was a joint meeting—the third—with the Hartford County Purchasing Agents Association, in Hartford.

CASABLANCA HERO AT CLEVELAND

Members of the Cleveland Association of Purchasing Agents listened to a vivid tale of the storming of Casablanca, by Lieutenant Wiley R. Swantz, Jr., of Kansas City, who was wounded on the third day of the fighting at Casablanca, at their March 18 meeting. Colonel A. Robert Ginsburgh, chief of the War Department's Industrial Service Division, also spoke. The meeting was arranged in co-operation

(Continued on page 146)

War workers find that Simonds Red Tang Files are easier to use . . . cut truer and faster, with less elbow-grease and fatigue . . . and require far fewer trips to the tool crib for replacements. That's because the teeth are shaped like those on a Simonds Metal Saw . . . they cut instead of scrape, and so stay sharp far longer. And what's more, *all* Simonds Red Tang Files are made to Simonds special standards of accuracy and quality . . . because they're under Simonds 100% Quality-Control every step of the way.

SIMONDS
SAW AND STEEL CO.

1350 Columbia Road, Boston
127 So. Green St., Chicago
228 First St., San Francisco
520 First Ave., So., Seattle
311 S. W. First Ave., Portland, Ore.

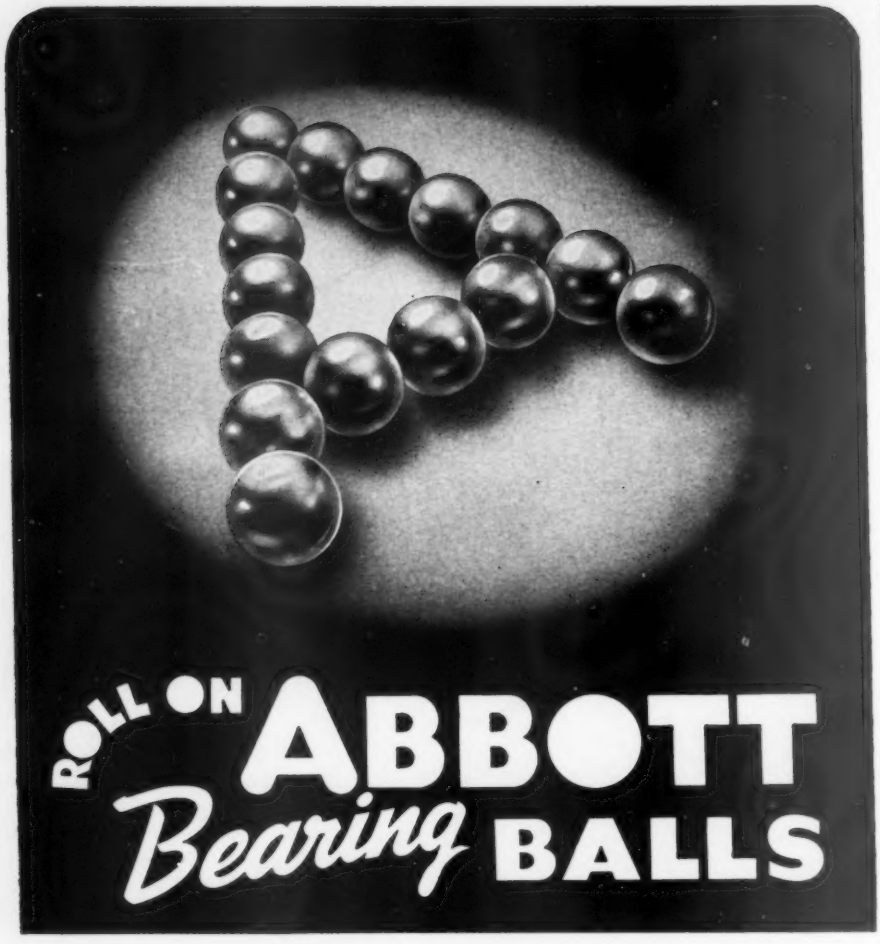
FREE BOOK

tells how to care for—and get the most use out of—files, hacksaws, and bandsaws. How many copies do you want? *Write today.*

SIMONDS
Famous Family of Metal-Cutting Tools

★ *Bought Your War Bonds This Week?* ★

When writing Simonds Saw and Steel Co. please mention Purchasing



You'll gain by making Abbott Bearing Balls your partners in performance. They're carrying the load in all kinds of heavy duty mechanisms that keep war products on the move.

STAMINA is Vital

Achieve it with Abbott Bearing Balls in your assemblies. Rely on these performance-proved components to contribute to and safeguard the dependability expected of YOUR OWN products.

Tell us your requirements so that we may estimate deliveries for you. We can supply the grade of ball that will match your own Standard of Precision.

KEEP 'EM ROLLING!

ROLL ON ABBOTT Bearing BALLS
THE ABBOTT BALL COMPANY HARTFORD, CONN. U.S.A.

(Continued from page 145)

with the War Production Board to promote salvage activity among Cleveland's industries.

Citing the 1943 program for the production of $57,000,000 worth of arms, ammunition, supplies and installations, Col. Ginsburgh said:

"We expect to meet these objectives because our record to date shows what we can do. Look at some of the February production totals: 1,244,000,000 small arms cartridges, 1,932,000 high-explosive shells, 419,000 bombs of all sizes, 8,000 aircraft cannon, 7,800 weapon-bearing combat vehicles, 2,000 anti-aircraft guns."

CLYDE PORTER MADE PRESIDENT BIRMINGHAM ASSOCIATION

Clyde Porter was elected president of the Purchasing Agents Association of Birmingham, Ala., at a meeting in the Redmont Hotel, Saturday, April 17. Other officers elected are: Geo. L. Wilson, first vice president; Barnie B. Jones, second vice president; L. M. Quick, secretary; Hoyt Prater, treasurer; J. W. Sledge, national director. The National Association Seventh Dictrict Council meeting was also held in Birmingham on the 17th.

HABERKERN ADDRESSES NORTHERN CALIFORNIA MEETING

President Roy C. Haberkern of the National Association was honored guest and principal speaker at Annual National Night of the Purchasing Agents Association of Northern California, April 5, in the Hotel St. Francis, San Francisco. The meeting was also featured by appropriate ceremonies honoring 25-year members of the Association.

April 3rd, a council meeting of District No. 1 was held, presided over by Siebert W. Mete, vice president of the National Association and Purchasing Agent, University of Utah. Other features of the month included the showing of the sound-motion picture "Preparation for Invasion," released by the British Information Services, the series including a portrayal of the training of commandos, and, discussion of "The Rubber Problem—Natural and Synthetic," by Dave Elliot, Manager, Goodrich Silvertown Stores. Forum meetings covered varied priorities and purchasing problems.

"PRIORITIES PARADE" AT TULSA

An overflow attendance at the March 23rd meeting of the Purchasing Agents Association of Tulsa featured by a "Priorities Parade" review of government regulations pertaining to industrial procurement, well demonstrated the pointed interest of Purchasing Agents in this broad subject. The feature was arranged by the Priorities Committee of the Tulsa Association, W. H. Barclay, R. V. Stephens and K. G. Manning. Mr. Barclay as chairman lead the discussion. In addition to his committee associates others on the program were E. A. Taggart, W. C. Norris, Mfr., Inc.; H. A. Shanks, Shell Oil

(Continued on page 149)

Shirtsleeves without Stuffing

GIVE PROMPT ACTION ON BRASS PROBLEMS

FIRST THING a newcomer finds out about Bristol Brass is that there are no stuffed shirts behind the desks. In the offices, as in the mills, it's a hard-working outfit all the way through, with no fuss or feathers on the side. So when anyone comes in with a problem in brass, we figure his time is just as valuable as ours. He is welcomed in to see the man who can help him most . . . the president or any of his shirtsleeved running mates . . . who give the right answers straight and unvarnished, with no red tape wrapped around them.

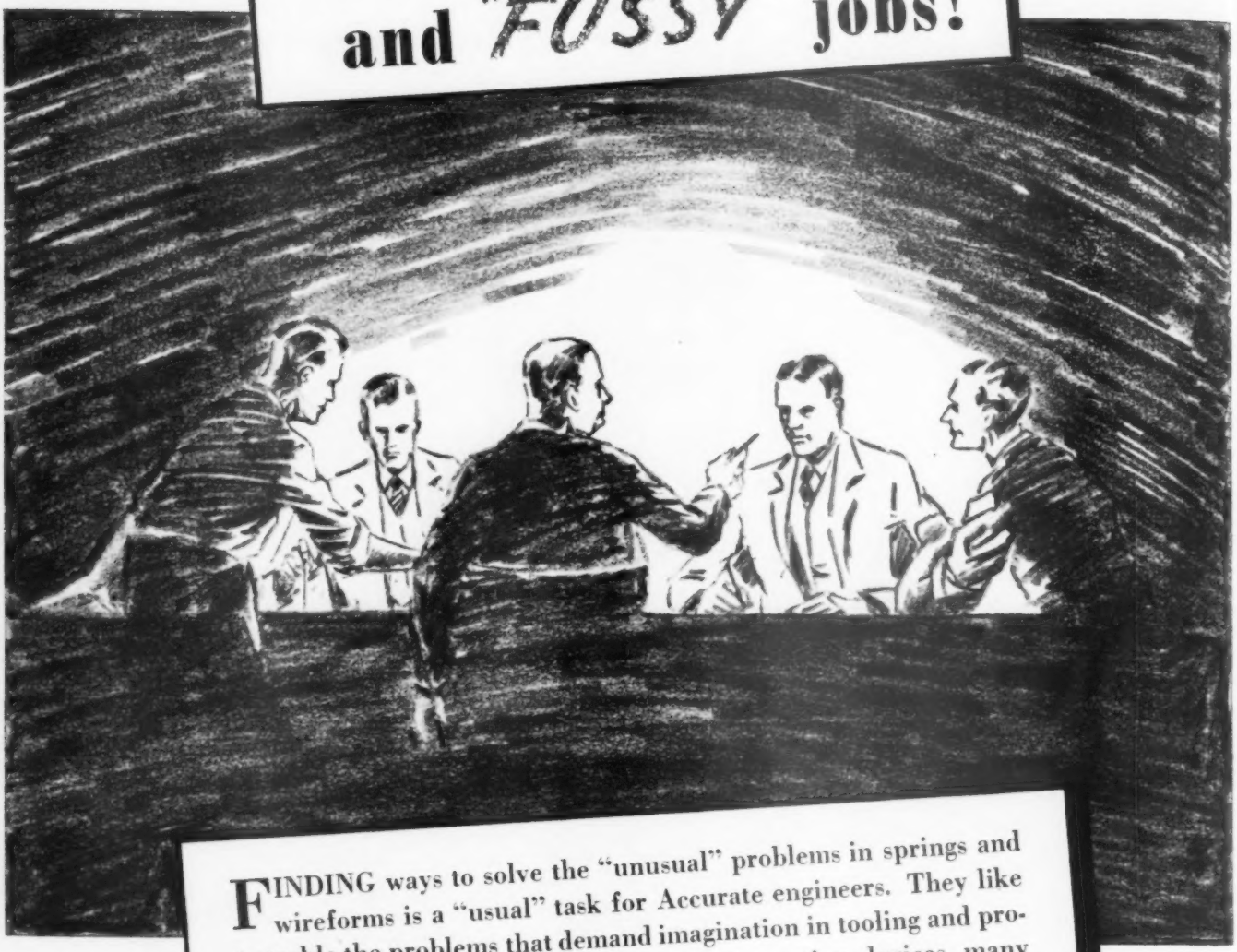
And in the process we try to make him enjoy himself . . . because for ninety-two years it has been a Bristol philosophy that business is better off if it's kept free from the grim and tiresome mass of formalities that breed confusion, cut down efficiency, and impair final results. What's more, in ninety-two years we have been lucky enough to find a lot of brass users who see it the same way. If *you* are like-minded, we'll certainly look forward to meeting you, and talking over future plans for your brass products.

Makers of Brass Since 1850, at Bristol, Connecticut

THE BRISTOL BRASS CORPORATION

When writing The Bristol Brass Corporation please mention Purchasing

We like the "TOUGH" and "FUSSY" jobs!



FINDING ways to solve the "unusual" problems in springs and wireforms is a "usual" task for Accurate engineers. They like to tackle the problems that demand imagination in tooling and production planning — and in testing and inspection devices, many of which are built especially for the job. Accurate engineers and production men have the experience and "know how" that offer short cuts to time, labor and material savings.

No requirements of a spring user are too exacting for Accurate Service — no problems too complex. Accurate customers know that — and if you have spring or wireform problems you will be pleased to discover it too. Send in your specifications or ask to see an Accurate engineer. You will like Accurate cooperation, quality and service.

Send for the Accurate "Handbook on Springs"— it's convenient to use and informative — free, of course!

Accurate Springs

ACCURATE SPRING MFG. COMPANY, 3825 W. Lake Street, Chicago, Ill.

When writing Accurate Spring Mfg. Company please mention Purchasing

(Continued from page 146)

Co., Inc.; C. F. Hamm, Boviard Supply Co.; G. O. Ash, Sinclair-Prairie Refining Co.; C. R. Clinkscales, district director in charge of materials, office of PWA, Tulsa; A. A. Hardy, priorities district manager, Tulsa WPB office. The subject proved a magnet for many Purchasing Agents from nearby towns and members of various supply companies. R. E. Griffith, purchasing agent, Vickers Petroleum Co., Wichita Kans., made the trip by bus and plane.

Three new members were unanimously elected to membership, and the application of another presented for the first reading. O. E. McClatchey, a long time member of the association was recommended as the Association nominee for vice president of District No. 2 of the National Assn. The district includes Houston, Dallas, Fort Worth, Oklahoma City, Tulsa, and Tampico, Mexico, associations.

ELECTIONS AT PITTSBURGH

The Purchasing Agents Association of Pittsburgh, elected the following officers at its April 20 meeting: President, R. O. Keefer, Aluminum Co. of America; vice president, J. H. Phillips, Pittsburgh Steel Co.; treasurer, E. C. Burkle, National Bearing Metals Co.; secretary, C. H. Rindfuss, Pittsburgh Screw & Bolt Corp.; National director, P. B. Zoeller, Elliott Company. The meeting which was held in Hotel William Penn, was sponsored by past presidents of the association and was styled Experience Night.

N. Y. METROPOLITAN CLUB HEARS TALK ON COAL

W. H. Gehring, Assistant Division Purchasing Agent, E. I. du Pont de Nemours & Co., who recently published a paper "B. T. U.—To Be or Not to Be", lead a discussion on "Coal" at the April 7 meeting of the Metropolitan Purchasers' Assistants Club, New York, in Midston House.

The following slate of officers of the Club has been presented by the Nominating committee composed of Robert O. Condit, chairman; L. A. Gleason and Andrew Gunther:

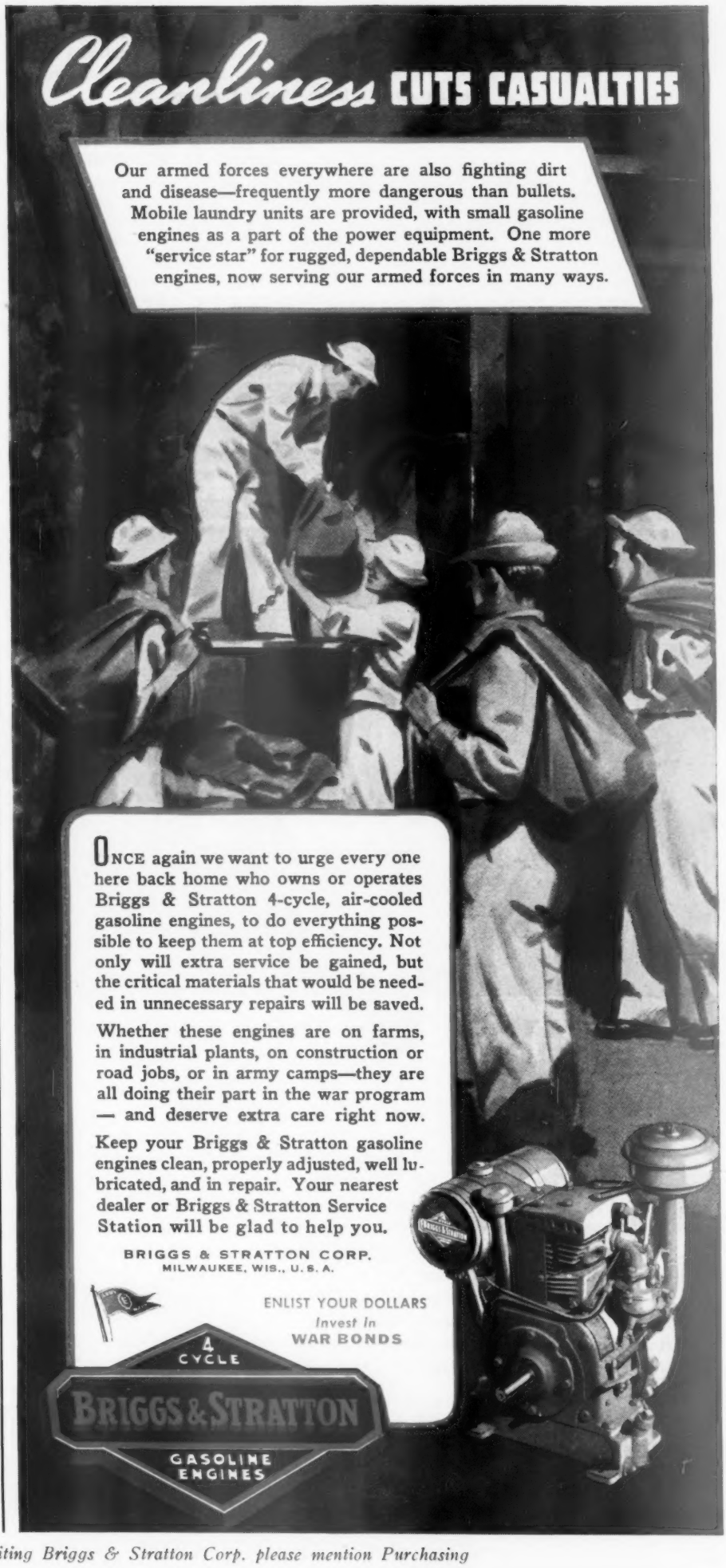
President, C. H. Berry.
Vice-President, J. B. Wuehrmann.
Secretary, P. R. Stokes.
Treasurer, K. M. Reed.

President Wm. P. Durland automatically succeeds Andrew Gunther as Chairman of the Board.

TALKS ON RATIONING AND RUBBER AT BIRMINGHAM

The "Importance of Business Men Serving on Rationing Boards" was the subject of a talk by A. Kay Foster at the March 23rd meeting of the Purchasing Agents Association of Birmingham. March 30, Elbert A. Hamilton, Birmingham manager of the Manhattan Rubber Cor-

(Continued on page 150)


Cleanliness CUTS CASUALTIES
Our armed forces everywhere are also fighting dirt and disease—frequently more dangerous than bullets. Mobile laundry units are provided, with small gasoline engines as a part of the power equipment. One more "service star" for rugged, dependable Briggs & Stratton engines, now serving our armed forces in many ways.
ONCE again we want to urge every one here back home who owns or operates Briggs & Stratton 4-cycle, air-cooled gasoline engines, to do everything possible to keep them at top efficiency. Not only will extra service be gained, but the critical materials that would be needed in unnecessary repairs will be saved.
Whether these engines are on farms, in industrial plants, on construction or road jobs, or in army camps—they are all doing their part in the war program — and deserve extra care right now.
Keep your Briggs & Stratton gasoline engines clean, properly adjusted, well lubricated, and in repair. Your nearest dealer or Briggs & Stratton Service Station will be glad to help you.
BRIGGS & STRATTON CORP.
MILWAUKEE, WIS., U. S. A.
ENLIST YOUR DOLLARS
Invest In
WAR BONDS
4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

(Continued from page 149)

poration, who has been in the rubber business for the past 35 or 40 years, gave the members the "low down" on the rubber situation. April 6, George Cole and others attending the Utility group meeting in Detroit reported on developments there.

ANNUAL MEETING OF CAROLINAS-VIRGINIA ASSOCIATION

The annual meeting of the Carolinas-Virginia Purchasing Agents Association was held in Charlotte April 9 and 10. Former Governor O. Max Gardner of Shelby and Washington was the banquet speaker. Among the other speakers were L. H. Kise of the War Production Board, Charlotte; Joseph I. Kitchen of Philadelphia, vice president of the National Association, and J. W. Knowlton, economist, Duke Power Company.

HOLD SECOND ORGANIZATION MEETING AT MENOMINEE

The Purchasing Agents Association held its second organization dinner meet-in Green Bay, Mich., at Hotel Northland, on Thursday, March 18. The new organization area comprises the territory from Oshkosh, Wis., to Escanaba, Mich. The Purchasing Agents active in organizating the new association are J. F. Taylor, Ansul Chemical Co., Marinette; Loren Miller, Miller Sash & Door Co., Marinette; Leonard Johnson, Limestone Products, Menominee; T. L. Christensen Marinette Paper Co; and Urban Remmel Unit Structures, Peshtigo.

CHARPENTIER HEADS WESTERN MASS. ASSOCIATION

R. A. Charpentier is the new president of the Western Massachusetts Purchasing Agents Association, being elected at the April 7 meeting of the association held in the Hotel Sheraton, Springfield. Other officers elected are: First vice president, Charles M. Healey, Jr.; second vice president, R. A. Benjamin; Secretary-treasurer, John A. Pond.

Robert F. Lybeck, chemical engineer, Colonial Beacon Oil Co., in the course of a talk on synthetic rubber declared that automobiles which are produced after the war will be equipped with tires of synthetic rubber which will be good for the normal life of the car—50,000 to 75,000 miles. There will be enough rubber next year, he said, because of synthetic rubber production, to meet all war and civilian needs. He also stated that butyl rubber could be used to make some types of paper waterproof.

VEGETABLE OILS IN THE WAR—AT CHICAGO

Otto Eisenschiml president of the Scientific Oil Compounding Company, Chicago, was the principal speaker at the April 15 meeting of the Purchasing Agents Association of Chicago. Mr. Eisenschiml who has developed many new uses for vegetable oils, is a recognized national authority on vegetable oils, and also is the author of much Lincolniana.

"THIS EMBATTLED WORLD" AT MILWAUKEE

Rev. Thomas B. Lyter spoke on "This Embattled World" at the April 13 dinner meeting of the Milwaukee Association of Purchasing Agents which was preceded by a Commodity Discussion at 5:30. The Milwaukee Association has received five new applications for membership.

CMP AT PROVIDENCE

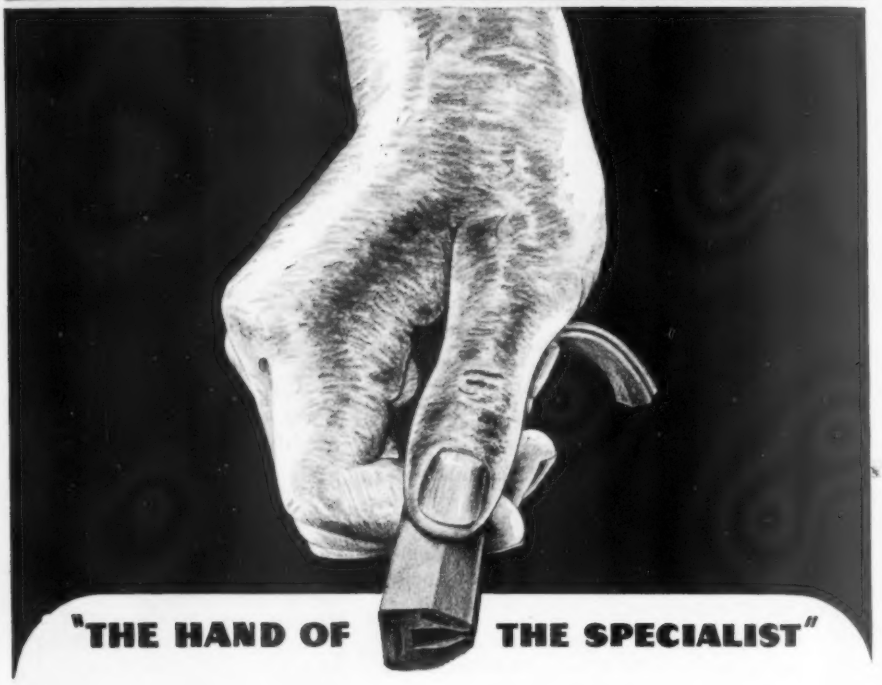
James Q. Dolan, head of the Priorities Division of the War Production Board, Providence, R.I., spoke on the Controlled Materials Plan at the April 22 meeting of the Rhode Island Purchasing Agents Association, in the Narragansett Hotel. For the Commodity section of the meeting, the Dierks Lumber & Coal Company's motion picture "Over Pine Mountain Trails" was shown.

HABERKERN AT BOEING PLANT

Roy Haberkern, President of the National Association of Purchasing Agents, viewed the spectacular production lines of the Boeing Aircraft Company in Seattle while on a recent nationwide tour which brought him into 36 cities. Home of the

(Continued on page 152)

CONTINENTAL RUBBER WORKS



"THE HAND OF THE SPECIALIST"

The critical part rubber is playing in winning the war has, from the first, placed a definite responsibility on Continental. Because of its forty years of specialized experience in the manufacture of industrial and mechanical rubber goods, Continental has helped our Armed Forces solve many of their unprecedented rubber problems. Wherever rubber—natural, reclaimed or synthetic—is demanded for war work, Continental stands ready to place its engineering and research experience at the command of the manufacturer or user.

CONTINENTAL RUBBER WORKS *makers of the* VITALIC

ERIE, PENNSYLVANIA · U·S·A· *line for forty years*

New Low-Cost SURFACE GRINDER

...with NEW FEATURES not found in Grinders costing *many times as much*

Check the outstanding features of this DELTA-Milwaukee Toolmaker—read the specifications below—and then try to estimate the price of this husky, accurate, portable Surface Grinder. You will probably be off by more than 100% because this versatile machine has advantages which are not present in surface grinders costing many times its remarkably low price. It is ideal for surface grinding, tool sharpening and any grinding operations within its range—and because of its low cost can be quickly swung into any spot to free machines costing ten times as much.

Superior Features of this TOOLMAKER SURFACE GRINDER

There are so many unusual features on this new Surface Grinder that it has to be seen and operated to be fully appreciated—but here are a few of the "highlights":

Improved, well-designed spindle—the "heart" of any Surface Grinder—made extra-long with bearing at either end, widely spaced. Forward bearing is large surface taper bronze bearing of design usually found only in much more expensive grinders—rear bearing is sealed-for-life ball bearing.

Special Wheel Mounting System—utilizes two-piece adapter so that either wheel, or wheel and adapter, can be removed. Thus once wheel has been trued up, wheel and adapter can be removed and replaced without need of re-dressing wheel.

Improved Table—Smooth operating, with conveniently located control handles—has long ways so that table rides solidly. Gibs provided so that all play due to wear can be eliminated. Micrometer collar, with wide graduations on the traverse adjustment permits accurate settings. The table is provided with T-slot for clamping fixtures or magnetic chuck in place.

Specially Designed Column—of one-piece construction, cast of high-tensile iron, normalized and accurately ground to close tolerances. Steel gib guides bracket yoke so it is always in perfect alignment. Entire column together with bracket, can be rotated 360°.

Send for Catalog

giving full details and prices on the new Delta Surface Grinder—and also showing full line of Delta drill presses, band saws, abrasive finishing machines and other Delta low-cost machine tools. Get in touch with nearest Delta Industrial Distributor or send coupon below.

THE ARMY-NAVY "E"—awarded for excellence in the production of machine tools vitally needed in the war effort.

SPECIFICATIONS

Maximum length that can be ground—13½"; Maximum width that can be ground—6"; Maximum space under 7" wheel to table—9½"; Maximum space under 7" wheel to B & S No. 510 Magnetic chuck—6"; Table surface 5¾" x 12"; Traverse feed; one graduation is .001"; Maximum adjustment of wheel by means of micrometer is ½"; each graduation is .0005"; Minimum diameter cup wheel with standard guard in place 3½"; Maximum diameter wheel 7".

DELTA
MILWAUKEE

The Delta Manufacturing Company
642-E E. Vienna Ave., Milwaukee, Wis.

Gentlemen: Please send me your new catalog giving full details and prices on the Delta Surface Grinder, and your full line of low-cost machine tools.

Name .....

Address .....

City ..... *State* .....

(Continued from page 150)

famed Flying Fortress heavy bombers, the Boeing factory is rated as one of the most efficiently organized in the entire aircraft industry. Mr. Haberkern was impressed by the plant operation, particularly the highly efficient manner whereby every square foot of factory space is utilized.

E. W. Johnson, city buyer for the Boeing Aircraft Company, accompanied Haberkern on his tour of the plant.

George A. Renard, secretary of the National Association, addressed the Purchasing Agents Association of Louisville, Ky. at their April 8 meeting in the Kentucky Hotel. Professor Charles W. Williams of the U. of L. also spoke.

Army Purchase Information Bulletin

Copies may be obtained from Small War Plants Branch, Purchases Division, Headquarters, Army Service Forces, Washington, D. C. This bulletin was prepared to guide business men who may desire to negotiate contracts with the Army. Section 1 outlines what the Army buys, names the eight separate and distinct Purchasing Departments, shows what officers do the buying, where they are located, and in general what they purchase. "Business should take the intiative and become familiar with Army needs, in the same manner that other customers' requirements are studied. It should learn the Army's simplified and decentralized methods of purchasing" states the Bulletin under the heading "How to Open Negotiations". Maps show the areas in which Procurement District officers buy materials, and investigate manufacturers' facilities.

Section 2 gives detailed information on Quartermaster Corps depots, area of distribution, Arsenals and Depots; Chemical Warfare Service, Signal Corps Procurement offices, Corps of Engineers, Medical Department and Transportation Corps.

Section 3 on Army Exchanges, gives a partial list of military posts and camps in Continental United States.

Section 4 gives information in regard to the Corps of Engineers, Military and Non-Military Construction, and lists the contracting and purchasing offices.

Section 5 lists the Field Purchasing Offices of the Navy.

Section 6 is a General Index to Items Purchased.

The maps accompanying the foregoing show: Ordnance Procurement Districts; Army Air Forces Procurement Districts; Chemical Warfare Service Procurement Districts; Engineer Procurement Divisions; Medical Department Procurement Planning Districts; and Transportation Zone Procurement Offices. Signal Corps Procurement Offices do not confine their purchasing to prescribed geographical areas.

ANSWERS TO CMP QUESTIONS

Answers to the most frequently asked questions in connection with the operation of the Controlled Materials Plan have been made available by the War Production Board in booklet form.

These questions and answers have been compiled following field surveys by the staff of the Controlled Materials Plan Division, and represent an aid to industry in operating under CMP Regulations as they stand today.

The questions and answers fall into five classes, involving general aspects of the plan; allotments and preference ratings; inventory and inventory adjustments; maintenance, repair, and operating supplies procedure; and the transition from PRP to CMP.

PLANS FOR CHECKING COMPLIANCE WITH CMP REGULATIONS

Plans for checking compliance with Controlled Materials Plan regulations are now being formulated by the War Production Board Compliance Division and, in the near future, a representative group of between 5,000 and 10,000 users of controlled materials throughout the United States will be checked by investigators for the Division.

Approximately 1,200 field inspectors will be used in the investigation, most of them being on loan to the War Production Board from the Federal Trade Commission, the Wage and Hour Division of the Department of Labor, the Federal Security Agency, and others.

The investigation will follow lines adopted in the past for checking com-

(Continued on page 155)

War Drawings Are Extremely Valuable! Assure Their Permanence – Use

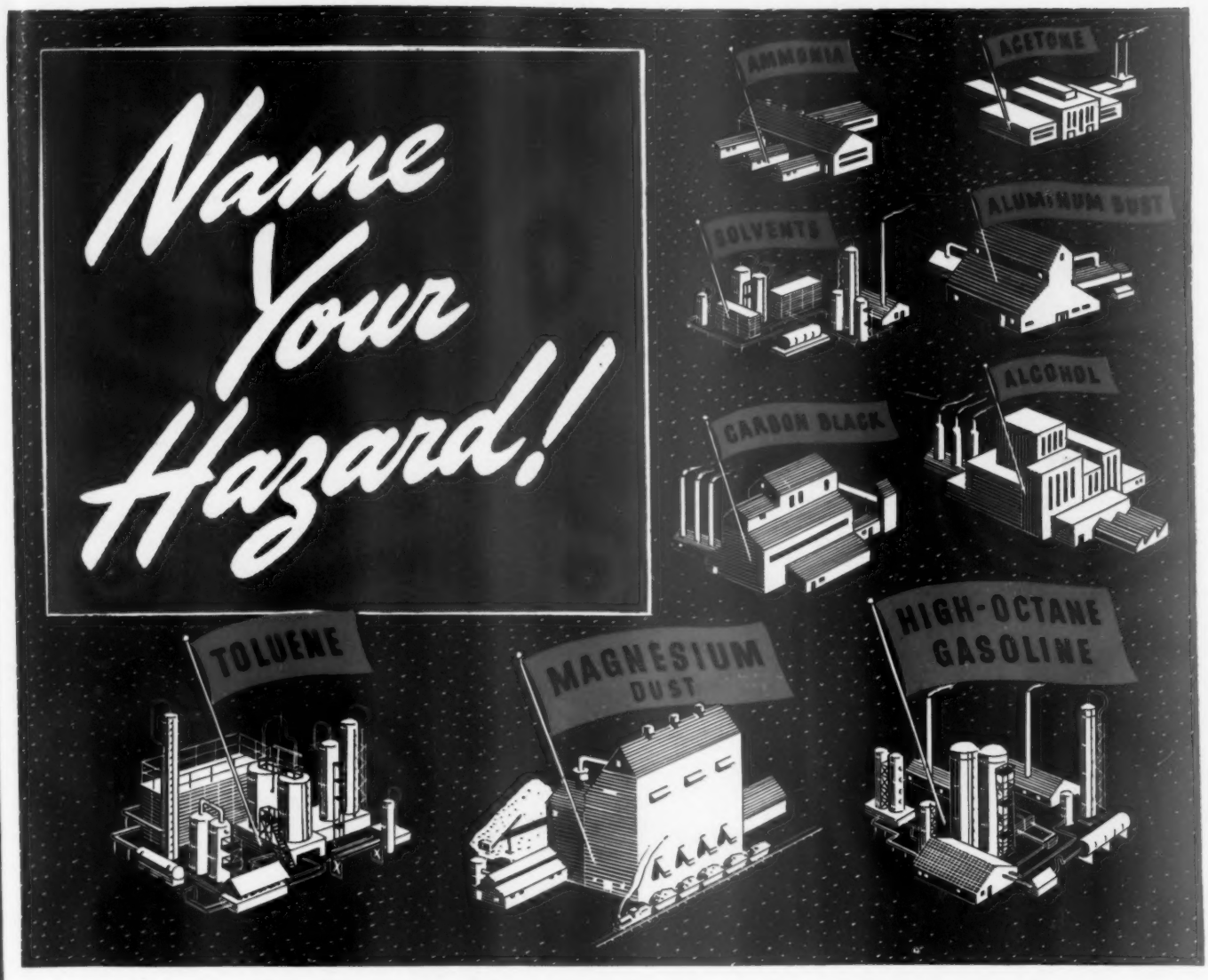
ARKWRIGHT TRACING CLOTHS!

Here are two advantages of Arkwright Tracing Cloths – especially important if you're producing war drawings! First, Arkwright Tracing Cloths don't become brittle or opaque – don't lose the high transparency needed to make sharp, accurate transfers – even when filed away for years. Second, Arkwright Tracing Cloths can be run through blueprint machines time after time without tearing, fraying, or curling. Safeguard all war drawings – use Arkwright Tracing Cloths. Arkwright Finishing Company, Providence, R. I.

Arkwright TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 20 YEARS

When writing Arkwright Finishing Company please mention Purchasing



THERE'S A G-E EXPLOSION-PROOF MOTOR TO MEET IT

No one type of motor is "best" for all kinds of hazardous locations. The *right* selection may eliminate the need for fire-walls to isolate the motor, and for awkward remote-drive arrangements.

Our engineers offer to work with you to select the motor, control, and other auxiliary equipment that best combines simplicity with security on the job.

General Electric builds the most complete line of explosion-proof and dust-tight motors available, tested and listed by Underwriters' Laboratories, Inc., for specific industrial hazards.

Most of these motors are as compact as standard open types, and require even less maintenance because of their totally enclosed construction.

Information on motorizing equipment in hazardous places is given in our publication No. GEA-3647. For this or any other motor assistance that can help speed war production, just call your General Electric Representative. Or write *General Electric, Schenectady, N. Y.*

Three More G-E "FIRSTS" in Motors for Hazardous Places

EXPLOSION-PROOF TO 600 HP

Totally enclosed squirrel-cage motors up to 600 hp are now listed by Underwriters' Laboratories, Inc., for Class I, Group D, locations, where atmospheres may contain gasoline, petroleum vapors, acetone, alcohols, natural gas.

TESTED AND LISTED FOR COMBUSTIBLE DUSTS

Built in a wide range of types and sizes, this motor is U.L.-listed for Class II, Group F, locations—where coal dust, coke dust, or carbon black may be present.

FOR METAL DUSTS LIKE MAGNESIUM, ALUMINUM

Ordnance plants find wide application for this totally enclosed motor, tested and listed by Underwriters' Laboratories for Class II, Group E, locations.

GENERAL ELECTRIC

750-197-8030

Looking ahead with Asbestos

"Leave it to that starter cartridge to do a job. A snap of the switch and the engine's *gotta* spin. Helps get a plane into the air—*sure*—when a split-second counts! Smart idea, that cartridge—and I understand one of the most important things in it is a small disk made of asbestos packing."

Right you are, Sergeant. That asbestos disk in the back of the cartridge directs the entire explosive action forward. What's more, it's K&M Asbestos Sheet Packing in 75% of all aircraft starter cartridges.

K&M is a name that a lot of airmen will remember when they go back to civilian jobs. They will know it stands for downright dependability. They will rely on it for better packing performance with air, steam, oil, water, acid or gas in the "V" years to come.

Emergency production for war has taught manufacturers many a lesson—and as with K&M, has pointed out the way to produce more, faster, with less. We have confidence that Industry will use this important lesson—aided by constant research—to help in building a better peacetime world

* * *

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind . . . since 1873

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

K&M best in asbestos

When writing Keasbey & Mattison Company please mention Purchasing

(Continued from page 152)

pliance with the Production Requirements Plan and other priority procedures.

While all CMP regulations will be covered in the survey, special emphasis will be placed on inventory controls and proper use of allotment numbers to obtain controlled materials.

"The investigation will be thorough," W. John Logan, head of WPB's Compliance Division, said in announcing the survey. "Compliance with Controlled Materials Plan regulations is of vital importance to war production, and wilful violations will be treated accordingly."

The survey will be extended later to cover all companies operating under CMP, including producers of both "A" and "B" products and prime and secondary consumers.

CA APPLICATION UNNECESSARY ON CERTAIN CONSTRUCTION TO $10,000

A simple plan for the allotment of controlled materials under CMP for certain types of construction costing less than $10,000 has been announced by the War Production Board.

On March 4, WPB empowered Regional Offices to authorize the beginning of agricultural and many types of commercial construction costing less than $10,000. It is for construction started under this delegation of authority that the procedure was established. Agricultural construction covered by the procedure includes barns, silos, and other farm buildings while commercial construction includes such buildings as stores, garages, laundries, office buildings, warehouses, and similar structures.

No application to a claimant agency for allotment of controlled materials is necessary for construction of this type. Under the procedure now set up, a simplified PD-200-c form applicable to these cases will be used. This form, which is an applicaton for priority assistance or application to begin construction without priorty assistance, requires submission of a material list.

The materials it is proposed to use are listed and the forms are filed with the War Production Board District Office. The forms then go to Regional Offices which make allotment of controlled materials and assign preference ratings on CMP-L-127 forms. Attached to this form is a copy of the builder's PD-200-c showing the materials which have been approved.

INSTITUTIONAL BUYING AND INTERPRETATION OF CMP 5A

The following bulletin and interpretation of CMPA 5A by its Liaison Committee were released by the Educational Buyers Association, New York:

Governmental agencies, and private institutions such as schools and colleges, churches, hospitals, libraries and welfare establishments are provided with the necessary procedures for obtaining maintenance, repair and operating supplies after March 31, by the issuance of CMP Regulation 5A.

The new regulation assigns an allotment symbol, MRO-5A, and preference ratings of AA-1, AA-2X and A-10 for use by the groups it covers.

The A A-1 rating may be used to obtain MRO supplies required for any activity or service listed in Schedule I of the new regulation, the AA-2X for those listed in Schedule II and the A-10 for activities and services not listed in either schedule.

Any agency or institution covered by Regulation 5A may obtain MRO supplies in such quantities as are available from warehouse or distributors under CMP Regulation 4, or at retail without preference ratings or allotments, without using the procedure provided.

Excepted from the provisions of the new regulation are the following services: gas, light, power, water and central heating, and communications, which are covered by other orders and regulations.

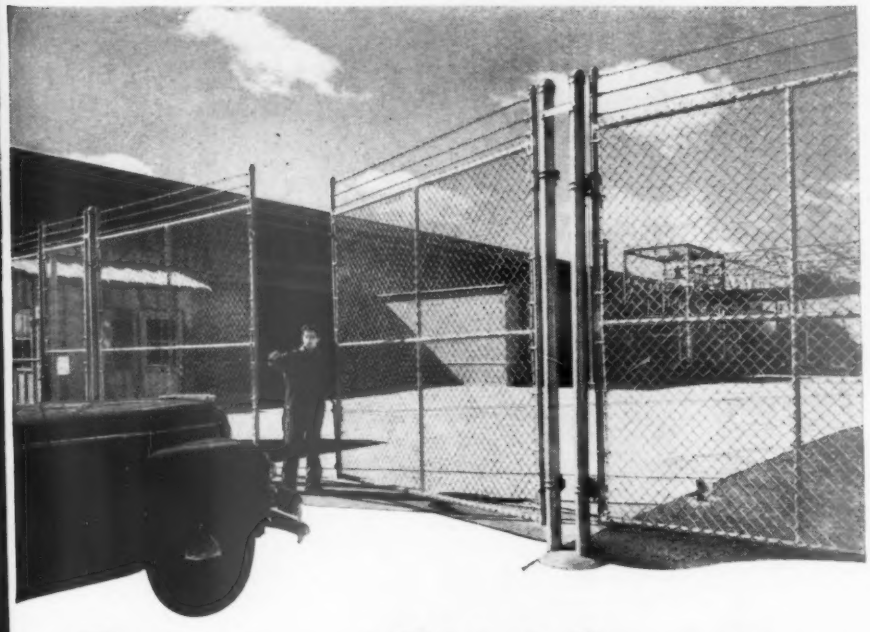
Quarterly Assignment

No agency or institution to which a rating of MRO supplies is extended on Form PD-408 may, during the quarter for which that rating is assigned, use any rating provided in Regulation 5A. It may, however, place an authorized controlled material order for the amount of controlled materials rated on its PD-408 in the manner prescribed in the new regulation, if the supplies are needed in connec-

(Continued on page 156)

PAGE FENCE

America's First Wire Fence — Since 1883



Safeguard Vital Operations

● To an extent greater than ever before, America is learning the importance of protecting production personnel, facilities and materials. Sturdy, long-lasting fence supplies that essential need, and on its service and quality records, Page Fence is recommended for trustworthy safeguarding. If your property does not have this protection, plan for it now and be ready when material is available. Send for copy of FENCE FACTS containing valuable information and name of our Association member nearest you. Consult this factory-trained fence expert. Address PAGE FENCE ASSOCIATION, Headquarters: Monessen, Pa.

PRODUCT OF PAGE STEEL & WIRE DIVISION — AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONN.

When writing Page Fence Association please mention Purchasing

(Continued from page 155)

tion with any of the activities listed in Schedules I and II.

All questions concerning intrepretation of the new regulation and use by agencies and institutions of the allotment symbol and preference ratings which it provides should be addressed to the Governmental Division of the War Priorities Board, Washington, D. C.

Committee Comment on CMP 5A

The new CMP Regulation No. 5A provides a uniform procedure for the delivery of maintenance, repair and operating supplies for Governmental Agencies and Institutions including schools and colleges, public or private. Under this regulation, an educational institution can extend the AA-2X rating for maintenance, repair and operating supplies. In addition, minor capital equipment not exceeding $100.00 in value may be purchased. This regulation is subject to all current E, L or M restrictive orders, exclusions under List A and other restrictions as found in the Regulation. If the item is restricted, application must be filed on the form specified by the order.

Your attention is called to the quantity restriction that the total purchases for maintenance, repair and operating supplies in 1943 cannot exceed the total for "items of the same class" purchased in 1942. This Regulation CMP 5A is subject also to the restrictions found in Priorities Regulation No. 1 which limits the inventory to a "practicable working minimum."

The following certification is to be used when applying the AA-2X preference rating assigned by this new Regulation for all items other than controlled materials:

"Preference rating.....(specify rating): MRO 5A. The undersigned certifies, subject to the criminal penalties for misrepresentation contained in section 35 (A) of the United States Criminal Code, that the items covered by this order are required for essential maintenance, repair or operating supplies, that this order is rated and placed in compliance with CMP Regulation No. 5A and that the delivery requested will not result in a violation of the quantity restrictions contained in paragraph (f) of said regulation."

Under CMP, an allotment symbol will be required. In the above certification, you will note the symbol for governmental agencies, educational institutions, etc. is MRO 5A.

This order provides that a preference rating assigned under this regulation shall be applied in accordance with paragraph (d) (3) and signed manually as provided in Priorities Regulation No. 3 or as provided in Priorities Regulation No. 7. It is suggested that a careful study of CMP 5A be made before using the rating.

P-100 Revoked

Effective April 2, Preference Rating Order P-100 was revoked. The rating and certifications found in CMP 5A must be used by all educational institutions.

REVISED VERSION OF PD-1A NOW NECESSARY

Business firms and individuals who normally apply for priority assistance on Form PD-1A are warned by War Production Board officials that (beginning April 15,) only applications made on the revised version of that form issued January 16, 1943, will be considered.

The new form is printed in two colors, yellow to be used in applying for preference ratings for items to be exported without further processing in the United States, and white for all others. Ample supplies of each are now available in WPB field offices.

PD-1A applications must be filed with the field office nearest the person seeking priority assistance. To send them directly to Washington entails delay in final action.

FIRST SELLERS ARE MANUFACTURERS

Any person making the first sale of an article of specified building materials and consumer goods covered by Maximum Price Regulation No. 188 is considered the "manufacturer" under that regulation according to the OPA.

This redefinition of the term "manufacturer" makes the regulation known as Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods other than Apparel applicable to all the manufacturing operations it was designed to cover and take

(Continued on page 158)

2 FOUNDRIES
Ready to meet your CASTING NEEDS

● *Transmission gear cover—a Forest City casting used by a large automotive manufacturer.*

FOREST CITY has two efficient, modern foundries—both equipped to produce precision castings on schedule and as specified.

We can supply machine tool castings, such as gear boxes, drill press heads, gear box covers and housings in gray iron, semi-steel or high test semi-steel in sizes from a ½ ounce to a half ton.

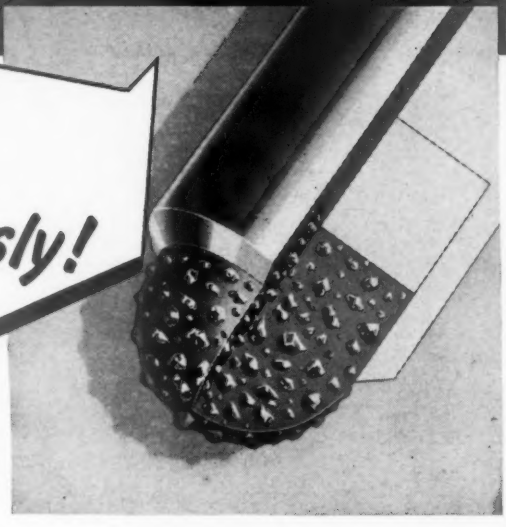
Send us your inquiries or ask for a representative to discuss your casting requirements.

Gray Iron, Semi-Steel and High Test Semi-Steel Castings

PHONE PROSPECT 5040
THE FOREST CITY FOUNDRIES CO.
2500 WEST 27th ST. • CLEVELAND, OHIO

Do the Diamonds in *Your* Dressers Go A·W·O·L?

The Diamonds in *these* Dressers Stay on the Job *Continuously!*



THE cemented carbide matrix in diamond-impregnated carbide dressers is moulded to the exact contour of the diamonds. Low coefficient of expansion and contraction insures permanent settings. No chance of loosening through heat expansion, as in ordinary dressers.

Carboloy Cemented Carbide Diamond Impregnated Dressers—made of the same guaranteed quality as Carboloy tools—give you this outstanding advantage plus many other benefits welcome under today's rush conditions.

You eliminate all remountings—get uniform results—receive maximum use from every precious particle of diamond—pay a uniform, non-fluctuating price—and save at least 25% annually on dresser cost. For all types of grinding wheels. Write for folder DR-100.

Quarter section of the Carboloy Dresser shown above. Fits all standard holders. No remountings necessary. To get a new cutting surface, simply give dresser a ¼ turn in holder. Long periods of continuous service. 2 minutes to "recondition" when required at infrequent intervals.

CARBOLOY COMPANY, INC.

Sole makers of the Carboloy brand of cemented carbides

11191 E. 8 MILE AVE., DETROIT, MICH.

Birmingham, Ala. • Chicago • Cleveland • Los Angeles • Newark • Philadelphia • Pittsburgh • Seattle

Canadian Distributor: **Canadian General Electric Co., Ltd., Toronto, Canada**

Another USE FOR CARBIDES

CARBOLOY CEMENTED CARBIDE DIAMOND IMPREGNATED DRESSERS

For GENERAL USE ON GRINDING WHEELS

When writing Carboloy Company, Inc. please mention Purchasing

THE *Strategy* OF MAN-POWER

RELIEVING VITAL MAN-POWER of unnecessary fatigue . . . avoiding unnecessary handling . . . saving unnecessary steps . . . keeping a constant flow of material moving to waiting hands and machines, that's man-power strategy headed towards victory.

America's war industries from coast to coast are improving their per-man-and-machine-hour production schedules with the aid of Mathews Time-Coordinated Conveyer Systems.

MATHEWS CONVEYERS FOR MECHANIZED PRODUCTION

If you are manufacturing war material, or anything vital to the success of the war effort, you can get Mathews Conveyers to handle that material. Rely as usual on your Mathews Engineer.

MATHEWS CONVEYER COMPANY ELLWOOD CITY PENNSYLVANIA

(Continued from page 156)

care of certain conditions under which a technical exemption from this regulation has resulted.

Under Amendment No. 10, effective April 5, 1943, "manufacture" means the person who makes the first sale of an article listed in Appendix A of this regulation after the article has been completed to the point indicated by the terminology of the appendix.

* * *

DIR. No. 1, CMP REG. 3—DELIVERY PRIOR TO 3RD QUARTER

Dealers, distributors, and jobbers, who are permitted to extend priorities ratings under the terms of Controlled Materials Plan Regulation No. 3, as amended, have been granted assistance until June 30, 1943, on orders which have already been placed, to prevent discrimination against their rated orders to which allotment numbers have not been applied. This action was announced by the War Production Board with the issuance of Direction No. 1, CMP Regulation No. 3.

The Direction indicates that orders without allotment numbers or symbols, placed by dealers, distributors, or jobbers prior to April 7, 1943, calling for delivery not later than June 30, 1943, must be deemed of equal rating to orders bearing the same grade of rating with allotment numbers or symbols.

This means that companies which supply distributors, jobbers, and dealers, will have to take this factor into account in adjusting production and delivery schedules of items ordered for delivery prior to the beginning of third quarter operations under CMP.

* * *

PROCEDURE FOR ADJUSTING MAXIMUM PRICES

Procedure under which the seller of any commodity who has been found by the Federal Trade Commission or a court to have discriminated illegally in prices between different purchasers may apply for adjustment of his maximum prices has been provided by the Office of Price Administration.

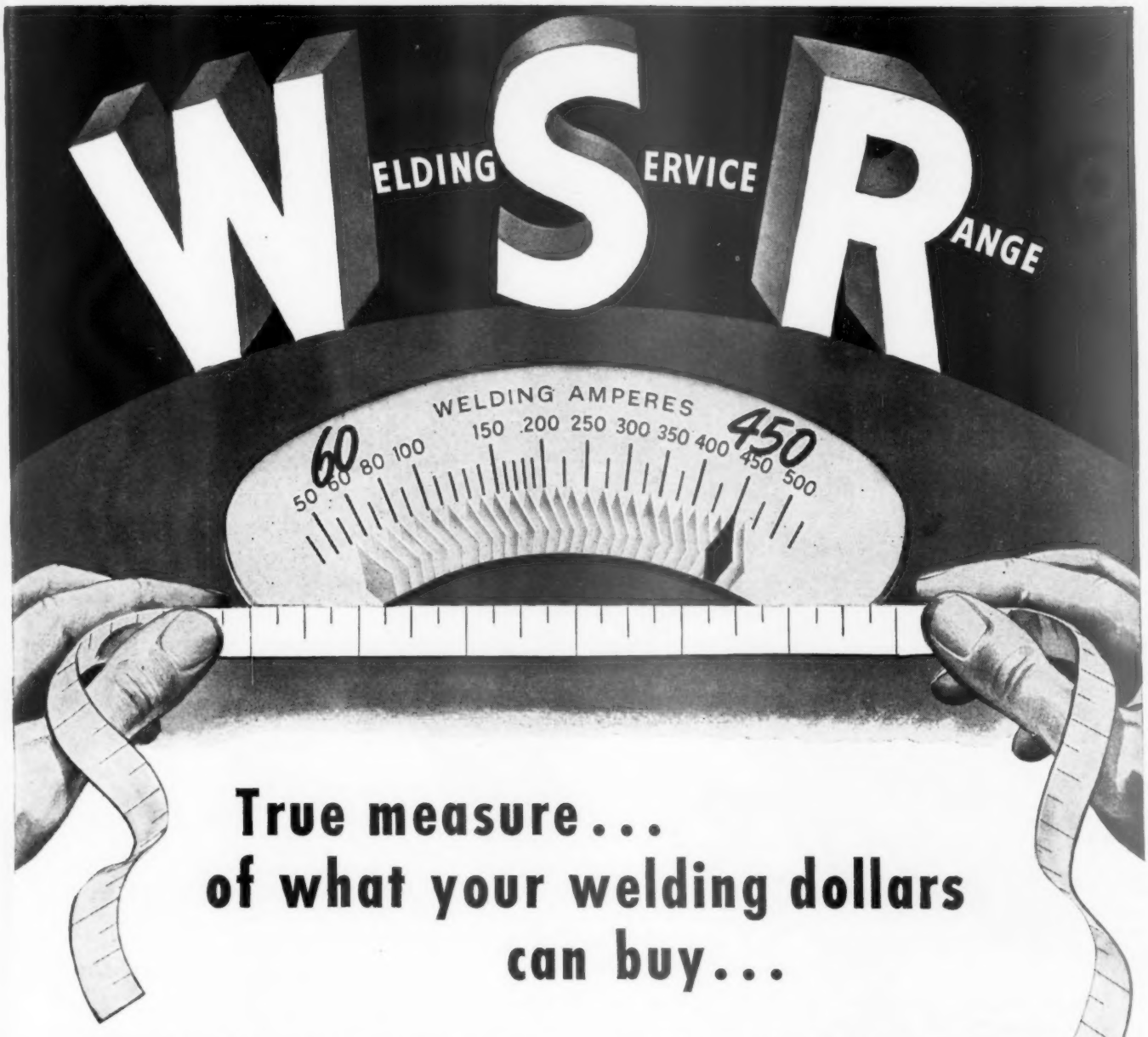
Under Supplementary Order No. 41, effective April 16, the seller may apply to the OPA office in Washington for adjustment of his ceilings if his case meets the following conditions:

(1) He has been found by the Federal Trade Commission or any court of competent jurisdiction to have discriminated in prices between different purchasers of commodities in violation of the provisions of the Robinson-Patman Act or of any statute prohibiting price discrimination and,

(2) that the elimination of the discrimination by lowering his price to the purchasers against whom he has discriminated would cause him substantial hardship; and

(3) that the elimination of the discrimination by raising his prices to the purchasers in whose favor he has dis-

(Continued on page 160)



True measure... of what your welding dollars can buy...

Answer this important question in your own interest: What is the most sensible way to buy welding heat? On a theoretical or nominal rating which does not consider minimum and maximum output? Or on the WSR (Welding Service Range) which is actual delivered output over a *usable range*?

The WSR (Welding Service Range) method enables you to measure welding heat by the cost per ampere, based upon the machine's *maximum* output.

Measure this cost for P&H Arc Welders. Then measure the added values in P&H's *single control* and automatic arc response for all classes of work. Get this accurate appraisal before you invest in welding equipment. See your P&H Representative or write for the folder, "The Welder-Wise Way to Buy Welding Heat."

P&H ARC WELDERS

Gen. Offices: 4577 W. National Ave., Milwaukee, Wis.

HARNISCHFEGER CORPORATION

ARC WELDERS · EXCAVATORS · ELECTRIC CRANES · P&H · MOTORS · HOISTS · WELDING ELECTRODES

Canadian Distribution: Canadian Fairbanks-Morse Co., Ltd.

When writing Harnischfeger please mention Purchasing

AVOID DESTRUCTION for your rubber-sheathed cords and cables by protecting them against conditions that accelerate failure . . . by more care in handling . . . by repairing promptly and properly.

SUN AND HEAT. Avoid as far as possible exposure to direct sun rays. Look for sections exposed to excessive air temperatures and avoid "hot spot" locations.

ABRASION AND KINKING. Use guards or protective covering wherever possible. Uncoil and operate to avoid twisting, kinking, and excessive temperature rise. Use reel with largest possible drum diameter.

OIL AND CHEMICALS. Wipe off regularly and clean with washing soda solution. Remove from oil and chemical exposure as soon as possible or paint with a corrosion-resistant coating.

OVERLOADING. Check actual loads against rated amperage; also fuse and circuit breaker contacts. Correct temporary wiring as soon as possible.

Repair *nicks and cuts* immediately with tape; then shellac the taped areas. Trim back *broken sheath,* tape to same thickness as original jacket and patch vulcanize if possible; or apply tape extending beyond repair, then friction tape half-lapped overall and finish with waterproof paint.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY Branches and Warehouses in Principal Cities

ROEBLING JAR ROEBLING

(Continued from page 158)

criminated is prohibited by the price regulation under which the sale is made.

The application must be filed under provisions of Revised Procedural Regulation No. 1.

OPA does not assert that a price regulation affords a seller immunity from proceedings under anti-price discrimination statutes, it was pointed out.

If a seller has been found by the FTC or a court to have discriminated against different purchasers by reason of having granted discounts required or permitted under price regulations he may now apply under today's order for OPA permission to change his maximum prices in such a way that the discrimination will be removed.

PRIORITIES REG. 11A AMENDMENT

By an amendment of Priorities Regulation No. 11A, issued by the War Production Board, Production Requirements Plan units which do not process the materials listed in Regulation No. 11, but purchase only fabricated items or materials other than those listed, may now apply, during the calendar quarter beginning April 1, the ratings they were authorized to use by their first quarter PD-25A and PD-25F certificates to the same quantites of fabricated items and unlisted materials.

Previously, Regulation No. 11A limited use of first-quarter ratings by a PRP unit during the second quarter to the amount of unlisted materials and of fabricated items needed to balance the listed materials it was authorized to receive. Thus, until this change, assembly plants and other companies which previously operated as PRP units, but did not require listed materials in their output, had no general procedure for obtaining the needed production materials during the second quarter of 1943.

BAG RESTRICTIONS AMENDED

Restrictions of Conservation Order M-221, which permitted the use of only standard sizes of textile bags and shipping sacks for storage or shipment of certain commodities, are removed in the case of some of those commodities under the terms of the order, as amended by the War Production Board. Among the commodities from which the bag-size restrictions are lifted are chemicals, fertilizer, nuts, certain types of cement, animal feed, flour, plaster, starch, and sugar.

The effective date of the bag-size restrictions for the revised list of commodities covered by the order is May 1.

Control over exports of empty and filled burlap bags is imposed for the first time to conserve the supply of such bags. Exporters must obtain an authorization from WPB before making any shipment out of the continental United States. This authorization is an addition to any export licensing requirement of the Board of Economic Warfare. However, the restriction does not apply to the export of empty used sugar bags to sugar producers outside the continental United States nor to

(Continued on page 162)

Group of 12-12¾" dia. Link-Belt Ring-Oiling Propeller Shaft Bearings

ARE BEARINGS YOUR BOTTLENECK?

Building bearings—good bearings—has been our business for generations and you'll find Link-Belt bearings serving industry faithfully and well, wherever power is transmitted through shafting. Rigid Pillow Blocks—plain or gibbed, babbitted or bronze-bushed; Anti-Friction Pillow Blocks; Ring-Oiling Pillow Blocks and a great many other bearing types are included in the Link-Belt line from which you may select in sizes for every purpose. Stocks carried at all Link-Belt warehouses and many distributors. Send for copy of Catalog No. 800. Address the nearest office.

"Throw Your Scrap Into The Fight"

LINK-BELT COMPANY

Engineers and Manufacturers of Materials Handling and Mechanical Power Transmission Machinery Since 1875
Chicago, Indianapolis, Philadelphia, Atlanta, Dallas, Pittsburgh, Cleveland, Detroit, San Francisco, Toronto
Offices, warehouses and distributors in principal cities 5086

BUY WAR STAMPS

LINK-BELT

BUY WAR BONDS

POWER TRANSMISSION EQUIPMENT

When writing Link-Belt Company please mention Purchasing

FOR QUICK ACTION

• Our wartime strategy of making wheels only 3″ in diameter and under is approved and endorsed by WPB. We make a 24-hour a day job of it. All vitally needed wheels are shipped promptly. There is no let-up. Our central location gives us a head start on deliveries.

CUSTOM BUILT WHEELS

Just the right wheels for your particular job, no matter how precise or difficult it is.

The moment we have your grinding problem, it's turned over to abrasive engineers who make up the wheels that do your job better and faster.

Years of research and *Specialized experience are behind each Chicago Grinding Wheel.

You can depend on prompt deliveries. GET IN TOUCH WITH US!

AMERICA'S HEADQUARTERS FOR MOUNTED WHEELS SMALL GRINDING WHEELS

*Half a century of specialization has established our reputation as the Small Wheel People of the Country.

TEST WHEEL

Tell us the kind of job and size wheel you need. We'll be glad to send one without charge.

CHICAGO WHEEL & MFG. CO.

118 S. Aberdeen St. Chicago, Ill.

Send Catalog. Interested in 118-5

☐ Grinding Wheel ☐ Mounted Wheels

☐ Send Test Wheel. Size .....

NAME .....

ADDRESS .....

(Continued from page 160)

bags passing through the continental United States in shipment from one foreign point to another.

The specific type of paper bags subject to the order is clarified by re-defining them as "paper shipping sacks". Paper shipping sacks include single-wall, duplex, or multi-wall paper sacks designed for packaging specific commodities for storage or shipment. Container shipping sacks and overslip shipping sacks are excluded, as are combination textile-paper bags, grocers' variety bags, and bags made wholly from special protective papers such as cellophane, glassine, parchment, or waxed paper.

"Paper bags" as previously defined included any shipping bag made wholly or partly of kraft paper. However, combination textle-paper bags were excluded.

CWN AND "T" RATION COUPONS NOT TRANSFERABLE

Certificates of War Necessity and "T" ration gasoline coupons may not be transferred along with titles to trucks or other commercial vehicles, the Office of Defense Transportation announces. The action directly violates General Order ODT 21, the ODT points out, and may be punished by suspension or revocation of Certificates.

New operators receiving a motor vehicle through transfer must file an application for CWN immediately upon the transfer. Operators who already hold Certificates must apply for revised Certificates, using Form CWN-5-S if a single unit operator or Form 5-F if a fleet operator. Failure to file such applications may also result in suspension of the operator's CWN, the ODT said.

Single unit operators (operators of one or two vehicles) must return Certificates to their ODT District Offices and must surrender unused "T" coupons to their local War Price and Rationing Boards upon transfer. Fleet operators must advise the nearest ODT District Office of of their action and return the appropriate Sub-Certificate.

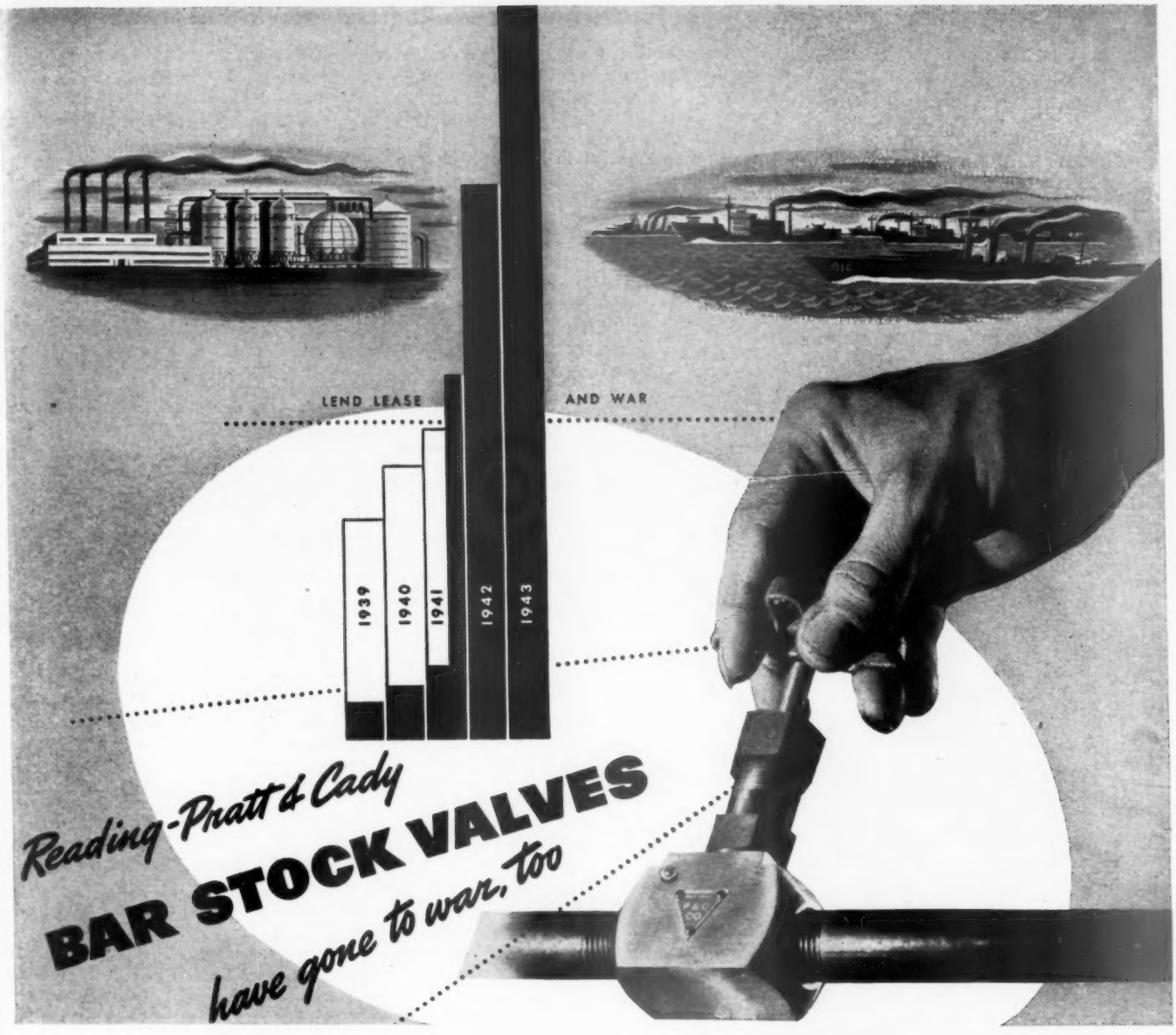
Operators changing their area of operation or substantially changing the nature of their business must inform their local ODT District Office of such changes. Changes of address should also be reported promptly. Failure to comply with these rules, ODT stated, may result in reduction of gasoline allotments or possible suspension of Certificates.

SOFTWOOD PLYWOOD FURTHER RESTRICTED

Further restrictions have been placed on the sale of softwood plywood from distributors' yards to consumers. Under limitation Order L-150-A as amended by the War Production Board, such sales will be permitted only on orders carrying a rating of AA-2X or better. The change will not affect transactions between producers and distributors. The action was taken to make sure that distributors' inventories at all times are sufficient to care for repair

(Continued on page 164)

When writing Chicago Wheel & Mfg. Co. please mention Purchasing



A thought addressed to those who need small diameter valves for precise, severe throttling services that are handled best by Bar Stock Valves.

In 1940, Lend-Lease made its call for Bar Stock Valves. But, there was still ample capacity for American industry.

Then came war—cargo and warships, high octane gasoline, raw materials for synthetic rubber, munitions, aircraft—all under wartime drive, demanding Bar Stock Valves because they provide the best means for precise, severe throttling.

That is the answer to the question: "Why don't we get Bar Stock Valves?"

We of Reading-Pratt & Cady are giving to this war production all we've got, turning out these finely made valves in volume by methods that will be of value to you when the war end makes it possible to resume the kind of business we prefer—making valves for a peaceful America.

READING-PRATT & CADY BAR STOCK VALVES
Sizes up to 1″

Globe, Cross, Angle, Plug-Type . . . Precise, automatic production . . . Long seating contact. Fine spindle threads. For severe throttling services. Steam, water and other fluids. Ratings: from 4000# at 150° F. to 475# at 1000° F.

READING-PRATT & CADY

MANUFACTURERS OF
READING CAST STEEL VALVES AND FITTINGS • PRATT & CADY BRASS AND IRON VALVES
D'ESTE VALVE AND ENGINEERING SPECIALTIES

Reading, Pa., Atlanta, Boston, Chicago, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Portland

A DIVISION OF AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT, CONNECTICUT

When writing Reading-Pratt & Cady please mention Purchasing

(Continued from page 162)

jobs and other essential requirements of the Army and Navy in various sections of the country.

LIABILITIES AND PENALTIES STAND SUPPLEMENTARY ORDER NO. 40

Repeal, revocation or modification of any price regulation does not release any person from liabilities or penalties incurred under the regulation before it had been changed, the Office of Price Administraton emphasizes.

This was made clear in Supplementary Order No. 40, effective April 2, 1943.

The order does not establish a new policy, OPA pointed out, but simply clarifies the stand which always has been taken.

Prices on Non-Profit Accommodation Services

Authorization for an increase in the ceiling price of a non-profit accommodation service applies only at wholesale, commercial and industrial levels and does not apply to retailers, or to any service which was supplied in March 1942 free or at less than cost, according to the Office of Price Administration.

These specific restrictions and a more precise definition of accommodation service are contained in a revision of Supplementary Order No. 38, effective March 15, the date on which the original order was to become effective.

For the restricted number of sellers of accommodation services who in March 1942 had a practice of making accommodation sales of services, the ceiling is the cost of direct labor at legally permitted wage rates and of materials at cost or the ceiling price, whichever is lower.

As amended the order makes clear that there is no authorization for department stores or other retailers to inaugurate any charge for services. Likewise there is no authorization for any wholesaler or other seller to inaugurate or to increase a charge for delivery in connection with the sale of commodities where delivery was made in March 1942 without charge or at less than cost.

In the amended order, "accommodation sale of service" is restricted to mean a sale made, other than at retail, for the convenience or benefit of the buyer at the total of the cost of direct labor at legally permitted wage rates and materials at cost of the ceiling, whichever is lower.

Specifically excluded from treatment as accommodation services are services performed without charge, or for less than cost, or in connection with the sale of any other service or commodity, other than an accommodation sale.

An example of the accommodation sales covered is an installation service rendered to the Defense Plant Corporation by a lessee of one of its plants. If the lessee in March 1942 had a practice of installing equipment owned by the Corporation and charging for the installation only the direct cost of labor and materials, it may currently charge these actual costs, regardless of price charged in March 1942.

ACCOMMODATION SALES PRICES

Maximum prices on accommodation sales at retail need no longer be posted or filed with local War Price and Rationing Boards, the Office of Price Administration announces.

Accommodation sales are transactions in which a manufacturer or other person sells items to his employees at actual cost. Since costs vary from time to time, the retail seller has a floating ceiling on these sales. Because of this, OPA pointed out, there is no valid purpose served by posting and filing the ceilings.

The exemption is made in Amendment No. 49 to the General Maximum Price Regulation, effective April 10.

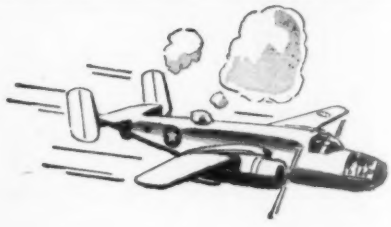
Loss-leader sales and other transactions of the kind made by regular retail establishments are not included among accommodation sales.

C. O. M-286—SPECIALTY PAPERS

Non-essential uses of certain specialty papers used in wrapping, specifically glassine, greaseproof and vegetable parchment, were prohibited through issuance of General Conservation Order M-286 by the War Production Board. It is estimated that this conservation of material, formerly used largely for transparent decorative wrapping, will effect a saving of from 10,000 to 15,000 tons per year.

Essential uses of this type of paper include packaging of food, ordnance, drugs

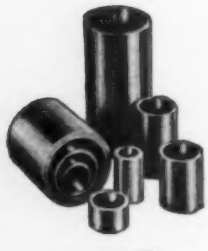
(Continued on page 166)



13 Ounces of Precision Bronze

● Whirling within this 13-ounce Bunting Bronze Bearing is the propeller shaft of the 2000 hp aircraft engine that powers this country's fastest, most powerful planes.

Also geared to the Victory Program is Bunting's Bronze Bearing Service for the war production industries on the home front. Bunting Bronze Standardized Bearings and Bunting Factory-Finished Bearing Bronze Bars, available from stock, save time, labor, metal in production and maintenance of machine tools, electric motors and all kinds of industrial machinery... Ask your wholesaler. Write for catalog. The Bunting Brass & Bronze Company, Toledo, Ohio... Warehouses in Principal Cities.



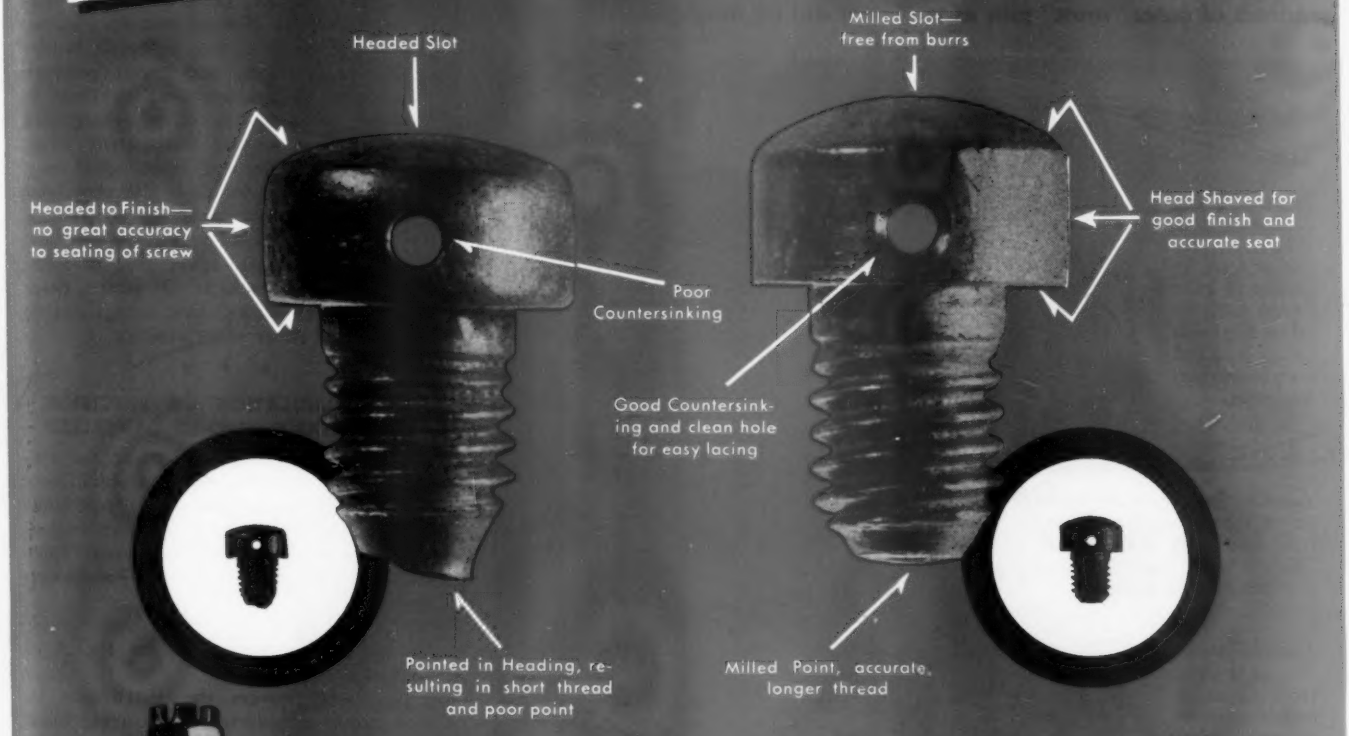
Bunting

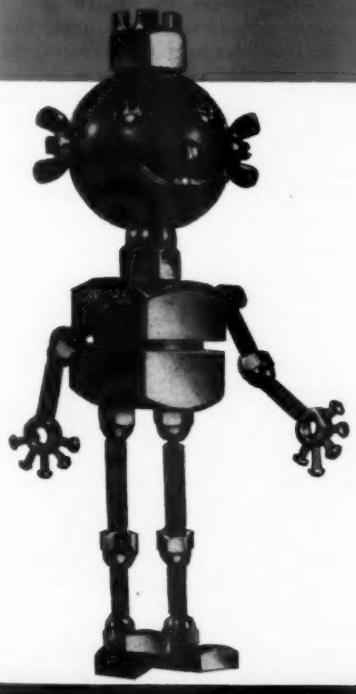
BRONZE BUSHINGS • BEARINGS • PRECISION BRONZE BARS

When writing The Bunting Brass & Bronze Company please mention Purchasing

Screws ARE different!

AND IT'S THE MICROSCOPIC DIFFERENCES THAT COUNT IN AIRCRAFT WORK


Headed Slot
Milled Slot—free from burrs
Headed to Finish—no great accuracy to seating of screw
Head Shaved for good finish and accurate seat
Poor Countersinking
Good Countersinking and clean hole for easy lacing
Pointed in Heading, resulting in short thread and poor point
Milled Point, accurate, longer thread



A customer making aircraft complained about some screws and sent us a batch of them. One look and we saw that they were not ours. The contrast between the other screws and National's was striking.

In order to make the difference clear we show above photographs of one of the screws made by ordinary production methods, and one of ours, together with actual magnifications of these same photographs.

The specifications called for AN screws with close tolerances, made of 4037 steel and heat treated. That's why methods commonly practiced for making competitive screws wouldn't do for this job.

National methods are stepped up to aircraft requirements.

National
HEADED AND THREADED
PRODUCTS

THE NATIONAL SCREW & MFG. CO., CLEVELAND, O.

When writing The National Screw & Mfg. Co. please mention Purchasing

JEWELOX *Metal Working* CLOTH

THE JEWEL BRAND OF ALUMINUM OXIDE

Specially processed for high strength and maximum grain adherence, coated with the hardest, toughest abrasive in commercial use, Jewelox Cloth has proved its all-round usefulness. Jewelox Cloth is grinding rifle breech blocks, smoothing aircraft assemblies, polishing valve stems for aviation engines, finishing Diesel engine crankshafts for submarines . . . and doing hundreds of other "must" jobs as well as it did its usual peacetime work.

Jewelox Discs . . . standard in diameters from 4 to 53 inches, in grits from 120 to 16, and in both cloth and combination backings.

Jewelox Belts . . . sizes to fit any machine, grits to fit any job, made by the famous "Velvet Joint" process to end bumping and jumping.

Jewelox Rolls . . . in widths from ¼ to 28 inches, on light or heavy backings, in every grit. Handiest of all forms for many job shops.

Jewelox Sheets . . . every standard size, grit and weight of backing, correctly flexed for the work it is to do.

Order Jewelox Metal Working Cloth from Your Distributor, or Ask Us for Samples.

Abrasive Products, Inc., 523 Pearl Street, South Braintree, Massachusetts.

ABRASIVE PRODUCTS INC.

SOUTH BRAINTREE MASSACHUSETTS

JEWELOX • JEWEL EMERY • JEWEL GARNET JEWELITE • JEWEL FLINT • NEW PROCESS

(Continued from page 164)

and health supplies, as well as for tracing papers in industrial plants and for electrical insulation, the Pulp and Paper Division of WPB stated. Only about 15 mills with a total capacity of approximately 140,000 tons a year manufacture these grades of paper.

Prohibited uses include the wrapping or packaging at the point of manufacture or assembly of the following: woven or knitted textile products and paper products, except when oil-impregnated; metal products, except when oiled, greased or sterilized; wood products, rubber goods and plastic products, except when sterilized candles and wax products; cosmetics, dentifrices, toilet materials and soap; laundry and dry cleaned products; leather goods and supplies; playing cards, bottled and canned goods, and candy products when used as an overwrap or liner, in conjunction with any other greaseproof, cellophane or similar transparent wrapping material derived from cellulose.

Use of these materials is also prohibited in the manufacture, wrapping or packaging of greeting cards, valentines and novelties, lamp shades, advertising displays, florist supplies, package gift wraps, decorations, toys, games, hair nets, jewelry, brushes and other toilet articles.

* * *

NEW REGULATION ON PRECISION HAND TOOLS—GPO E5 CANCELLED

A provision making it easier for machinists and other workers to obtain new gages and precision measuring hand tools needed in their employment is an important feature of General Preference Order E-5-a, issued by the War Production Board.

Workers heretofore have found it difficult to obtain hand tools on the A-10 ratings permitted them.

The order covers the distribution of new gages and precision measuring hand tools such as micrometers, verniers, calipers, and other precision tools and measuring devices used in industrial production, whether sold to the manufacturer or to the individual employee.

E-5-a restricts sales and deliveries by producers or distributors to approved users, other distributors, and approved employees as these three categories are defined in the order.

After May 1, 1943 sales and deliveries to approved users and distributors are permitted only on purchase orders bearing preference ratings of A-9 or higher. Such purchase orders must also be accompanied by a statement to the effect that they will not increase the purchasers' inventories beyond a 30-day supply.

The new order assigns a preference rating to individual workers who require precision tools on their jobs. Their preference rating is the same as that assigned by CMP Regulations to their employers for maintenance, repair, and operating supplies. For example, an employee of an ammunition plant would be entitled to use a rating of AA-1 on an order for a tool of this type required in his job, since that rating is assigned to ammunition plant's maintenance orders by Schedule I of CMP

(Continued on page 168)

A Quick Glimpse At

1 PLASTICS AVENUE

Since 1894 General Electric has been making plastics parts, because plastics do certain jobs better than other materials. Today—in 1943—General Electric is the largest producer of plastics parts in the United States, manufacturing thousands of plastics products for improved combat weapons and essential industrial equipment.

ONE PLASTICS AVENUE is the headquarters for G-E plastics. Here are located complete facilities for the design, development, engineering, and manufacturing of plastics parts.

For complete information about plastics—how you can use them efficiently and profitably—write Section A-5, One Plastics Avenue, General Electric Company, Pittsfield, Mass.

PLASTICS DIVISIONS
GENERAL ELECTRIC
PD-5

WE WANT YOUR INQUIRIES ON

MACHINED

WOOD

PARTS

Thousands of items are now being manufactured from wood, and E.L. Bruce Co. is in position to make many of them. We are specializing in quantity production on solid or glued-up parts, either completely or partially machined. Send us your inquiries and we'll tell you what we can do for you. Fast production, dependable service assured.

FACILITIES—Seven modern plants, centrally located for timber and transportation. Complete and efficient woodworking machinery of all types, including new box plant at Bruce, Miss.

EXPERIENCE—Bruce has a background of more than 25 years in the lumber industry. It has pioneered many important wood developments.

PERSONNEL—Over 3,000 skilled workmen and most capable key men. Free technical and advisory service under the direction of one of the country's leading wood experts.

DEPENDABILITY—Individual orders ranging up to a million dollars and more, delivered exactly on schedule. Highest financial and credit ratings.

E. L. BRUCE CO. • 1522 N. Thomas Street • Memphis, Tenn.

SEND US YOUR INQUIRIES

For our help with your problems, simply send us a description, blue prints or sample of items needed. Or write for further information.

BRUCE Specializing IN WOOD PRODUCTS

MANUFACTURERS OF BRUCE STREAMLINE FLOORING

(Continued from page 166)

Regulation No. 5. Precision tools may be purchased in this way only on a preference rating of AA-2X or higher and must be accompanied by a certification of the worker and his employer to the effect that the tool is required and that the worker does not own a similar tool capable of use in his employment. This rating provision becomes effective immediately; other provisions of the order on May 1, 1943.

The War Production Board also revoked General Preference Order E-5 as of May 1, 1943 since the subject matter of this order will be covered after that date by General Preference Order E-5-a.

NEW PRICING METHODS ON USED MACHINERY

An alternative ceiling for used machinery and second-hand machine parts, which is based, in general, on standard depreciation rates and allows sellers in some instances to obtain higher prices than existing maximums, has been announced by the Office of Price Administration.

The new pricing method is contained in Amendment No. 76 to Maximum Price Regulation No. 136 (Machines and Parts and Machinery Services), which became effective April 10, 1943.

Also included in the amendment are provisions for, (1) the sale of machinery leased by the Defense Plant Corporation to its lessees or to other firms, (2) for sales between corporations entitled to file affiliated returns under the Internal Revenue Code, and (3) for sales of machines sold only on a delivered or installed price basis.

43 REPORTS ELIMINATED

Priorities Regulation No. 8 which was the first step in a move to eliminate unnecessary or duplicating reports, has been further amended to eliminate requirements for reports on any of the forty-three forms listed in Appendix A to that regulation.

Previously, many uses of these forms had been eliminated, but until recently, users had to report on the listed forms, under the existing P orders.

APPROVAL OF LIMITED UTILITY CONNECTIONS

Advance approval of limited utility connections for construction or remodeling projects permitted under L-41 is granted in Supplemental Utilities Order U-1-d issued by WPB.

To qualify for such automatic approval, material for an electric, gas, or water connection must cost less than $1500 in case of underground connection or $500 in the case of other construction.

In addition, in the case of an industrial or commercial consumer, not more than 60 pounds of copper may be used in an electrical connection or 250 pounds of iron and steel for gas or water service.

In the case of domestic consumers, the material cost limitation is the same as industrial or commercial while the amount

(Continued on page 170)

RUBBER HELPS TO BUILD

Your Republic Distributor has the knowledge and facilities to provide advantages of supply and service available in no other way on your needs for mechanical rubber and other equipment. Utilize his services fully. His display of the Republic Distributor Emblem is your assurance of his qualifications.

for ARMIES for NAVIES

THE achievements in construction engineering have added a new chapter to the great story of American war effort—shipyards, air bases, military highways, military camps. Thousands and thousands of men and shovels, tractors, trucks, concrete mixers, great dredges—all at full speed. On every one of these projects, rubber has performed important tasks.

Dredge sleeves and suction hose on dredging equipment, suction and discharge hose on pumps, pneumatic hose on drills and hammers, oxyacetelyn hose for cutting and welding structural steel—all in constant use. Conveyor belts for spoilage excavation and for handling sand, rock and concrete aggregates, rubber transmission belts for shop machinery, water hose, packing, gaskets, air hose for divers, and even plumbing accessories, comprise some of the many mechanical rubber products required on these jobs.

Prompt replacement of rubber items and ever available service were and are vital to scheduled completion of these projects. Backed by factory technical assistance, the contribution of Republic Distributors to these projects cannot be overestimated.

THROW YOUR **SCRAP** INTO THE FIGHT

WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

REPUBLIC RUBBER

YOUNGSTOWN • • • OHIO

HOSE • BELTING • MOLDED GOODS PACKING • EXTRUDED PRODUCTS

DIVISION OF

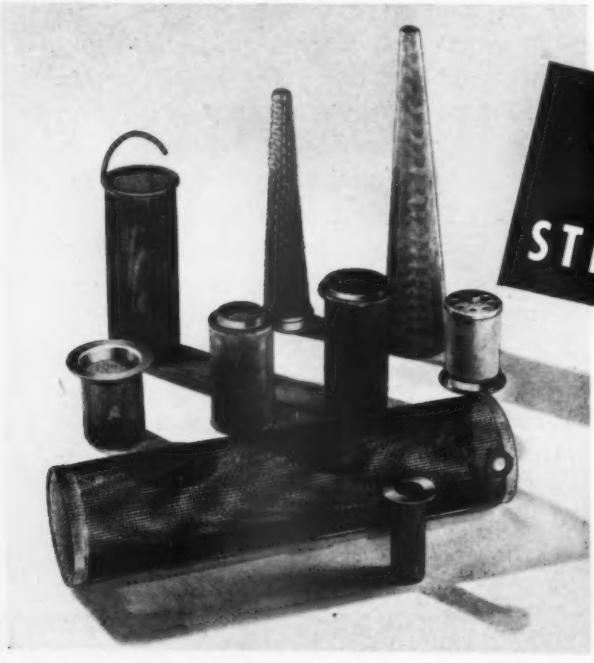
LEE RUBBER & TIRE CORPORATION

CLEAR, POSITIVE MARKINGS
SPEED PRODUCTION—
AVOID CONFUSION!

MARKAL PAINTSTIK markings are clear-cut, sure, lasting—on any material—on any surface (hot, cold, wet, dry, oily) Don't risk serious losses or costly delays in handling or shipping vital war materials through smeary, illegible paint brush or other error-inviting markings. Be sure and mark the MARKAL Way! REAL PAINT IN STICK FORM

★ Consult us on your difficult marking problems. Write for samples, literature.

MARKAL CO. 6-F EAST LAKE ST. CHICAGO, ILL.
"Originators of Paint Sticks"



JELLIFF FUEL STRAINERS

IF YOU WANT quality strainers on time, at a fair price, WRITE US NOW.

Jelliff has all the facilities for making fuel strainers. Wire drawing, weaving, and fabricating all in one plant — each step carefully watched by an inspector trained for that particular job. Rigid adherence to specifications and tolerances is guaranteed; AND SHIPPING SCHEDULES ARE MAINTAINED.

The C. O. JELLIFF MFG. CORP.
22 PEQUOT AVENUE • SOUTHPORT, CONN.

(Continued from page 168)

of material must be held within the limits established by the Housing Utility Standards issued by WPB.

Previously such connections were granted upon individual application to WPB. The change was made because administration of L-41, formerly centered in Washington and New York, has now been placed on a regional basis.

THERMOPLASTIC SCRAP BROUGHT UNDER PRICE CONTROL

An average reduction of about 25% below March 1942 market levels has been ordered by the OPA in regulation governing the sale of thermoplastic scrap. Dollars and cents ceiling prices govern the eight major types of thermoplastic scrap. The new ceiling is fixed upon the average level prevailing in the industry for the year 1941. The two most common of the eight major types of scrap covered by the ceilings, are cellulose acetate and cellulose nitrate, plastic grade. The other six are cellulose acetate butyrate, methyl methacrylate, polystyrene, polyvinyl, chloride, copolymers of vinyl chloride and vinyl acetate, and polyvinyl butyral. The following maximum prices are established:

1. MOLDING SCRAP

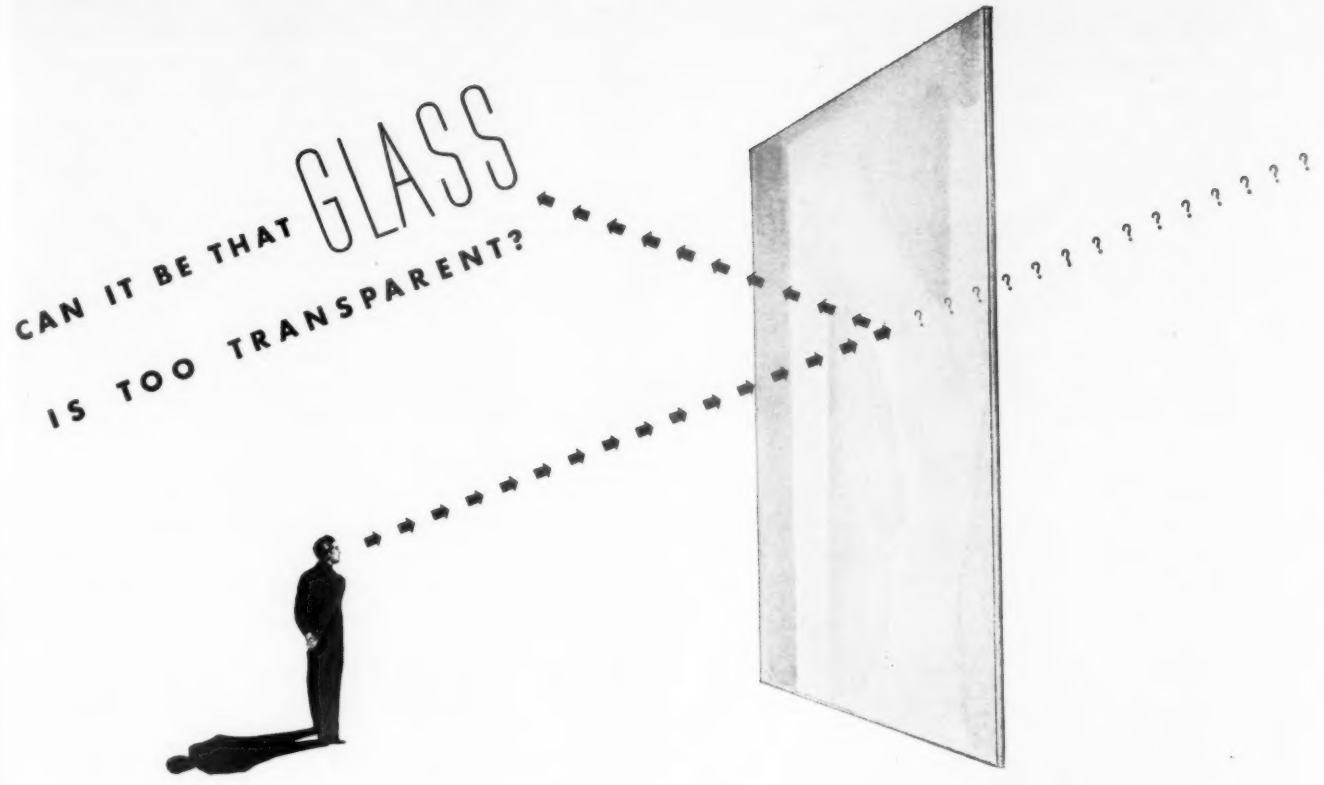
	Prices per pound		
	Crystal clear	Plain color	Mixed color
Cellulose acetate:			
Unground	$.21	$.17	$.11
Reground	.27	.23	.17
Reworked	.33	.29	. . .
Cellulose acetate butyrate:			
Unground	.23	.19	.13
Reground	.29	.25	.19
Reworked	.35	.31	. . .
Polystyrene:			
Unground	.16	.15	.09
Reground	.22	.21	.15
Reworked	.28	.27	. . .
Methyl methacrylate:			
Unground or reground	.28	.28	.28
Mixtures	.06	.06	.06

2. SHEET SCRAP

	Prices per pound		
	Crystal clear	Plain color	Mixed color
Cellulose acetate:			
Unground	$.11	$.09	$.06
Ground	.14	.12	.09
Cellulose acetate butyrate:			
Unground	.13	.11	.08
Ground	.16	.14	.11
Cellulose nitrate:			
Unground	.11	.09	.06
Ground	.19	.17	.14
Methyl methacrylate:			
Unground or ground	.15	.15	.15
Mixtures	.06	.06	.06

For polyvinyl chloride, copolymers of vinyl chloride and vinyl acetate, and polyvinyl butyral, the price is 21½ per pound unground or ground; mixtures 6¢ per pound.

All of the prices are f.o.b. seller's shipping point. Sellers may require buyers to furnish containers.



MAYBE SO, MAYBE SO. It is a fact that everybody looks *through* glass. You always have and you always will. Perhaps because it is so transparent, you've really never stopped to think about its other properties.

Now we ask you to look at the properties of glass . . . a good, long look . . . a look with your imagination.

You discover one of the most versatile materials in the world. These sparkling sheets we make have many amazing qualities, in addition to transparency, which make glass a better material for scores of everyday uses.

Chemically, glass is the most stable of all materials excepting the noble metals. It will not rot, oxidize, or disintegrate.

Dimensionally, glass is more stable, too. It keeps its shape. The coefficient of expansion is lower than practically any other material.

The surface of glass is among the hardest in the world. It is nonporous; will not absorb odors or moisture. It is more acid-resistant than any structural material. It offers unusual resistance to abrasion. It can be coated, polished, or etched. In large sheets, it can be made smoother than any other material. Its weathering qualities are unequaled.

Glass is *strong*. Make no mistake on that point. A square foot, quarter-inch sheet, the way we temper it, will withstand a pressure of 60 pounds per square inch. Double the thickness and you quadruple the strength. Our tempered glass has a modulus of rupture of 30,000 pounds per square inch, and it will withstand a thermal shock of 400 degrees Fahrenheit. Actually, tempered glass is stronger than many metals.

There are many more unusual physical and chemical properties of glass . . . properties found in combination in no other material. L·O·F can help you sort them out, team them up, practically any way you want. You can have the final product in flat sheets or bent shapes, laminated or fabricated with another material. You can have it in multiple units, or with metal or plastic collar.

Won't you write us about any possible use of glass that may appeal to you, no matter how revolutionary or unusual? That's the way to really find out. Libbey·Owens·Ford Glass Company, 1753 Nicholas Bldg., Toledo, Ohio.

Destructible?

Wood-Metal-Plastics-Glass. No material is indestructible. However, barring unseen conditions, no material will fail on a job in which it has been properly specified and engineered. When our application engineers say "Yes", you can be sure about glass.

LIBBEY·OWENS·FORD
A GREAT NAME IN *Glass*

When writing Libbey-Owens-Ford Glass Company please mention Purchasing

NO ROOM IN THE FILES! RECORDS SCATTERED ALL OVER THE PLACE! HOW CAN I GET ANY WORK DONE THIS WAY?
TRANSFER ROOM
SEEMS THAT EVERY RECORD I NEED IS IN THE TRANSFER ROOM
ME TOO, I WASTE MORE TIME JUST RUNNING BACK AND FORTH
SURE IS A NUISANCE TO HAVE TO FILE CARDS IN LETTER-SIZED DRAWERS, - WASTES SPACE, TOO!

HERE'S THE WAY
TO MEET *THAT* PROBLEM

GUARDSMAN
WOOD FILING CABINETS

A STYLE AND SIZE FOR EVERY NEED. AVAILABLE FOR IMMEDIATE DELIVERY!

For complete details on this extensive line of wood files built to match existing equipment, write today for the free 20-page Guardsman catalog.

IS LACK OF EFFICIENT FILING EQUIPMENT WASTING *YOUR* TIME?

In these busy days you just can't afford to let inadequate filing equipment slow the work of your dwindling clerical staff. Today's flood of business papers, and those of years to come, may be efficiently filed in the attractive, built-to-last, Wood Guardsman Cabinet. Remember, too, that *innumerable government regulations require that many operating records must be kept for at least two years!*

The Guardsman line includes letter and legal size units in 2, 3, 4, and 5 drawer heights; and 5x3, 6x4, 8x5, 8x8, and Tabulating card sizes. Here is the simple, effective cure for excessive transferring, overcrowding, delayed finding, and makeshift adaptations of filing equipment. *See the Guardsman at your nearest Remington Rand Office.*

SYSTEMS DIVISION **Remington Rand Inc.** BUFFALO, NEW YORK

When writing Remington Rand Inc. please mention Purchasing

IT'S YOUR MOVE!

Here's a Practical Way to Develop a Satisfactory Layout and avoid After-Moving Headaches

By DONALD F. GARDNER

IF war expansion faces you with the problem of moving your organization to larger quarters, read this article. You'll save yourself a whale of a lot of headaches if you do.

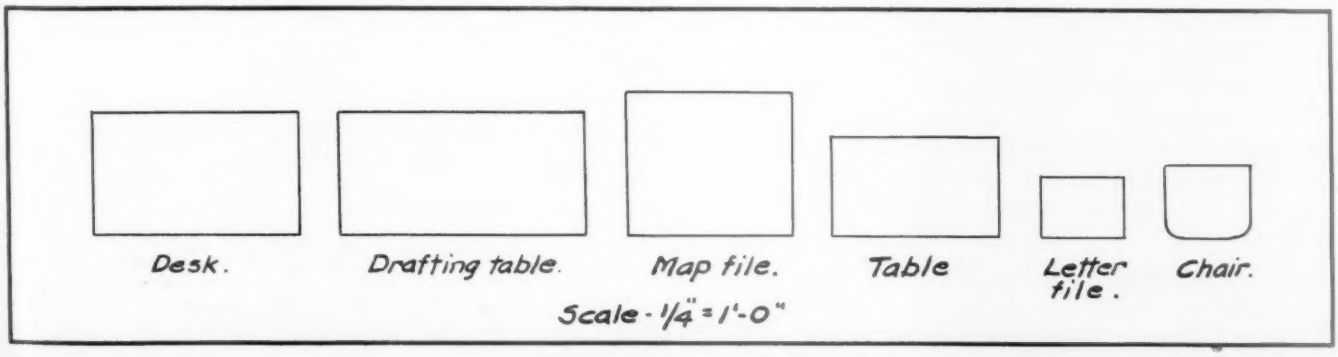
Let's proceed on the assumption that new offices have been selected which will meet your current needs. The big boss has given your choice his stamp of approval and a verbal go ahead. "Looks okay to me, Joe", he will say cheerfully. Let's get moved over there right away." And you will return his grin somewhat weakly and wish to God you were in the army and not 4-F.

The first thing to do is to get an architect's drawing of the space you plan to occupy. Plans of most buildings are available through the custodian or operator. If not, any draftsman can draw one to scale in short order. Then make a rough sketch showing proposed placement of desks, files, and every piece of equipment necessary to make your office run smoothly. Be sure to spot desks carefully to take advantage of natural and artificial lighting facilities. Remember, the stenographers and file girls need all the light they can get in order to keep their work output up to par. You'll increase morale and efficiency by giving them every consideration.

You'll find a template like the one illustrated very helpful in making your layout. It's made to scale and provides a pattern for each of the four major items of office equipment: desks, chairs, files, and storage cabinets. Place it on your drawing, trace around with a sharp lead pencil the unit you want to show, and there you are, with no measuring or mad arithmetical computations necessary. And a word of warning here, my friend. Make your plan as elastic as possible. The most carefully planned layout never works out quite as beautifully as it shows on paper, so leave some leeway for shifting and joggling, to fit the needs of specific individuals as well as actual physical space.

Once your plan is completed, hold a meeting of section heads. Go over the setup carefully, showing them the space which will be allotted their particular department. Be open-minded regarding suggested changes or revisions which may be proposed. Remember, they're the

Templates with space and equipment accurately scaled, make it possible to arrive at a satisfactory layout and simplify the moving operation



TEMPLATE.
(Cut from transparent material.)

THIN PAPERS
are Essential to
MODERN BUSINESS

to reduce
Office and Factory
expenses.

Specify one of
ESLEECK
THIN PAPERS

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

Recommended for
Thin Letterheads, Copies,
Records, Advertising.

Ideal for Air Mail, Branch
Office and Foreign
correspondence.

SEND FOR SAMPLES

ESLEECK
Manufacturing Company
Turners Falls, Mass.

people who have to sit at the desks. And if they're unhappy with the way they're facing, watch out, for little things like that can do much to create friction in any office.

After your revised floor plan has been approved (you will have to revise it, mark my words), call in a representative of the telephone company. Go over your proposed setup with him carefully. Show him the desk location of each person who is to have telephone service. Be sure to tell him whether the individual is right or left-handed so the telephone can be placed for the greatest convenience of the user. He'll be glad to plot the space for you to make fullest use of existing telephone outlets. If new ones are needed, arrange to have them installed in advance of your actual moving day. When this is done and preliminary wiring is already in, telephone service can be provided in a hurry.

Your next step is to number on your floor plan all the equipment shown. Give each major unit a numerical designation, beginning with 1 and running on up. For instance, Mr. Jones desk would be given Number 7. Mr. Jones chair would be numbered 7-a, his dictating machine 7b, etc. Then put corresponding numbers on each and every piece of equipment, using gummed kraft tape. A good idea is to paste your identifying tab on the left hand corner of all desks and tables. Then, when the piece is upended on a dolly, it will be unnecessary to get down on your hands and knees to identify it. Also, if you chalk mark equipment numbers on the floor of your new location, much confusion will be avoided. The movers match up the floor numbers with the number of the actual piece of equipment and set it down in its proper palce.

Get in touch with several of your local transfer companies to arrange for the actual move. You'll be money ahead if you have them quote on a job rather than on an hourly basis. To me, there is nothing more disconcerting than to see a $1.50 per hours mover leaning on a file while he contemplates life and the condition of the world in general. You'll save yourself grief by awarding the job to the most capable company, even if the price may be a trifle higher. Remember, a reputable concern will be quick to pay for any breakage, while a smaller outfit with only one or two trucks may not be so willing.

Work out a moving schedule with the manager of the company that will handle the job. To avoid upsetting office routine, it will be best to begin at the end of the normal business day and work on through the night until you're done. Notify all section heads when the move is scheduled so they can plan accordingly. Supply each department with sufficient cardboard cartons to take care of desk top equipment. Issue instructions that all ink and other "spillables" be removed from the desks. And arrange to have two members of each department on duty on the night of the move: one at the old location to see that all equipment is removed; and one at the new offices to spot and arrange furniture as it comes in. Get all the help you can, for you'll need it.

From then on if the situation is in the hands of the movers and the destiny that guides them. You've done all you can, although it won't seem so at the time. Terrible things will happen, I guarantee, for they always do. But if a plate glass desk top is smashed or the casters are lost from the Big Boss' swivel chair, be calm. You can buy a new top and more casters tomorrow. You'll feel like the ring-master of a seven ring circus, bringing chaos out of utter confusion, but that will pass, too. Suddenly the loose strings are gathered up and the job is done. Even though disgruntled executives, momentarily out of telephone contact with the outside world, may curse you audibly, keep smiling. Painstaking planning in advance will make the whole operation run smoothly. Remember, it's YOUR move! Good luck!

INSPECTING CONTAINERS FOR OVERSEAS SHIPMENTS

Manual Issued by Container Committee

Steps have been taken to improve the quality of containers used for overseas shipment of military and Lend-lease products.

A booklet, "Manual for Inspection of Damaged Shipments," was issued by the Container Coordinating Committee, of the war procurement agencies, to be used by receivers and field representatives of the war procurement agencies, War Shipping Administration, and foreign governments in the preparation of reports on damages to shipments of war materials and Lend-Lease supplies. The information obtained will be used to improve containers so that products will arrive at point of destination with minimum damage.

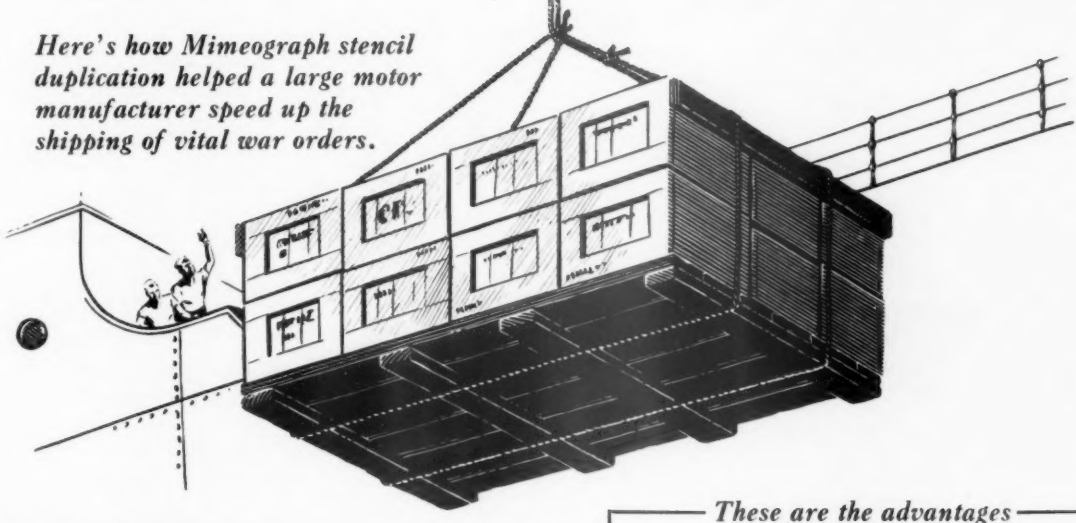
Report forms have been issued by most of the procurement agencies for report-

(Continued on page 176)

When writing Esleeck Manufacturing Company please mention Purchasing

A Better Solution to a Shipping and Invoicing Problem

Here's how Mimeograph stencil duplication helped a large motor manufacturer speed up the shipping of vital war orders.



With the full pace of war production, this motor manufacturer found it necessary to supply an increasing number of invoices, packing lists and shippers.

To speed shipping and save valuable man-hours, he turned to a single-writing method —Mimeograph stencil duplication.

Here's the operation

One permanent form, called the "combined spare parts packing list, invoice and shipper," is die-impressed on Mimeograph brand stencil sheets.

All the necessary information for packing list, invoice and shipper for each contract can then be typed on a die-impressed stencil *in a single writing.*

First the required number of invoices is produced on the Mimeograph duplicator. Then prices and extensions are blocked out on stencil, and spare parts packing list and shipper are then produced in required quantity.

These are the advantages

In addition to the ease of operation, this advanced method of handling shipping and invoice paper work has these advantages:

1. *The invoice, packing list and shipper are secured in required quantity from a single writing.*
2. *Copies are produced at speeds up to one hundred and fifty copies per minute.*
3. *Copies are sharply legible—permanent, and do not smear or fade with rough handling.*
4. *The cost of printed forms is eliminated.*

This is one example of the way that Mimeograph duplication is working for industry today. If war production has created new factory paper work problems for you, find out how Mimeograph duplication can help. Write A. B. DICK COMPANY, Chicago.

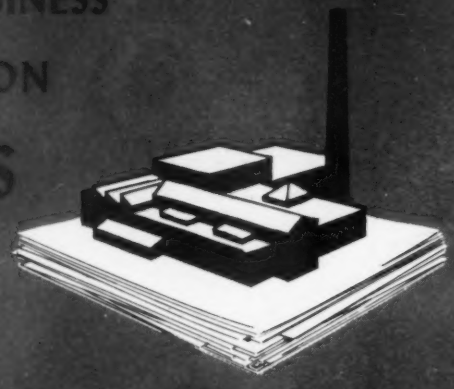
Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

The standard of speed and legibility in the one-writing system

BYRON WESTON CO. LINEN RECORD, EXTRA NO. 1 100% DEFIANCE LEDGER 100% WAVERLY LEDGER 75% CENTENNIAL LEDGER 75% WINCHESTER LEDGER 50% BLACKSTONE LEDGER 25% WESTON'S MACHINE POSTING LEDGER AND INDEX 50%

EVERY BUSINESS IS BUILT ON PAPERS



WESTON'S PAPERS MAKE AN ENDURING FOUNDATION

Look at the priceless records of title and probate in your local Court House. You are likely to find them on paper watermarked "BYRON WESTON CO. LINEN RECORD"

Are the records vital to the future conduct of your business equally as well protected against the ravages of time and hard handling?

Every important business record — production, distribution, financial, legal, insurance — needs to be placed on paper of WESTON quality, made of strong, durable cotton fibres. Your supplier will tell you —

"If Records Are Worth Keeping Keep Them On A WESTON Paper"

BYRON WESTON COMPANY
Makers of High Grade Papers
DALTON, MASSACHUSETTS

WESTON'S PAPERS

WESTON PAPERS · PROTECT YOUR RECORDS ·

DEFIANCE INDEX 100% WINCHESTER INDEX 50% WESTON'S BOND EXTRA NO. 1 100% DEFIANCE BOND 100% HOLMESDALE BOND 75% WINCHESTER BOND 50% BLACKSTONE BOND 25%

EVERY WESTON PAPER IS A COTTON FIBRE CONTENT PAPER

(Continued from page 174)

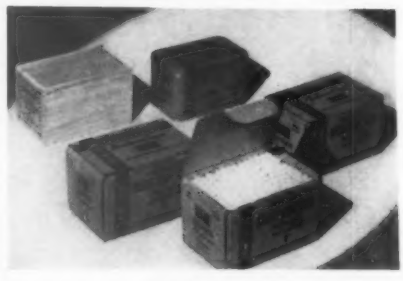
ing damaged shipments. The committee urged receivers and field men to report damages promptly, whether in transit, at destination, or at intermediate point, in accordance with the instructions outlined in the manual.

Various types and styles of shipping containers most frequently used in the transportation of war materials and supplies are described and illustrated in the manual. In addition, typical failures of the more common types of containers are described and illustrated. These are given as a guide to the inspector in order that he may report damages to containers more accurately.

The manual was prepared with the cooperation and approval of the following: Army, Navy, Department of Agriculture, Treasury Department, War Production Board, Office of Lend-Lease Administration, War Shipping Administration, and the Office of Defense Transportation.

Copies can be obtained from the Container Coordinating Committee, or from any of the cooperating agencies.

CORRUGATED BOXES REPLACE TIN FOR CHALK CRAYONS



Two-piece die-cut corrugated boxes for chalk crayons have been developed by the Hinde & Dauch Paper Co., Sandusky, Ohio, for the Art Crayon Company. Each box holds 144 pieces of chalk, and is said to provide adequate protection in shipping and storage. Locking tab on lid forms a secure closure but permits easy opening. Saving in original package cost is put at 25%.

DOMESTIC GROWN SUBSTITUTE FOR TAPIOCA

As part of its intensive research to develop a suitable domestic-grown replacement for tapioca, National Starch Products Inc., has entered into a program for the planting, growing, and harvesting of "waxy maize," according to a statement by Arthur D. Fuller, executive vice-president of the company. "Waxy maize" is a new type of starch-bearing plant, the kernels of which have a wax-like appearance, although they actually contain no wax.

In collaboration with the Agronomy Department of the University of Nebraska, National last year conducted a research and growing program whereby a considerable amount of "waxy maize" was grown for experimental work. This experimental crop was harvested last fall and milled into starch. A much larger

(Continued on page 177)

(Continued from page 176)

planting of "waxy" seed has been made this spring.

National's Research Department has been intensively studying the properties of this starch, and considers the quality to be an excellent commercial replacement for tapioca. It is believed that this starch, together with the dextrines and other modifications to be made from it, will be of particular interest to the food, textile, paper, and adhesive industries.

Mr. Fuller points out that its economic future is nevertheless uncertain, inasmuch as after the war it will have to compete with tapioca and related starches from Brazil, San Domingo, and other countries in the West Indies where the climate lends itself to the growing of root starches. The cost of growing "waxy" corn and milling it into starch is much higher than that of regular corn starch.

COPIES OF VESTED PATENTS

Alien Property Custodian Leo T. Crowley announces that "libraries" of copies of vested patents have been opened at his New York office, 120 Broadway, and in the Chicago office in the Field Building. According to Howland H. Sargeant, Chief of the Division of Patent Administration, these "libraries" will contain all the patents vested from enemy and other aliens, arranged for ready reference and also catalogued in classified order. Vested applications will also be open to public inspection as rapidly as they become available. Interested manufacturers, attorneys and others will be given assistance in ordering copies of patents and full information on securing licenses.

POSTWAR PLANNING SHOULD BEGIN NOW

Those who say "let's not talk about postwar problems until we have won the war," are out of step with the American public according to a survey conducted by the Psychological Corporation and released by the National Association of Manufacturers.

To keep American industry informed about what the public is thinking, the National Association of Manufacturers makes constant use of accredited organizations for surveying public opinion on questions and issues affecting industry.

The Psychological Corporation poll, reflecting proportionate opinion of all wage groups and all sections of the country, show an overwhelming majority of 92% favoring immediate planning for the postwar era. Only six percent are opposed and two percent undecided.

The public also is convinced that industry should be working now to develop new and better products, 75% voting "yes" to this question and only 13% dissenting. On the question of whether the government should now plan a vast public works program for the postwar period, the majority in favor decreases

(Continued on page 178)

BEAUTIFUL... yet

RUGGED

The swooning belles of the "nineties" are out of favor . . . today men prefer their women capable, as well as lovely. Especially in these times there is a need for capability. When you plan a booklet, manual or catalog, its cover, as always, must be attractive—but it must also be serviceable. For such a combination there is no other cover stock to compare with

KROYDON COVER

"Tough as a Hippo"

Here is a rugged stock available in a wide range of beautiful colors with a handsome glossy ripple finish that defies soiling, resists moisture and stands up under long hard handling. It folds equally well across or with the grain, can be stitched, sewed, eyeletted or stapled successfully, and accepts readily any form of presswork including halftones.

Ask your Printer or Paper Man for samples (KROYDON is nationally known) or write us direct at the mill. HOLYOKE CARD & PAPER CO., Springfield, Mass.

Companion cover lines by "The Cover Paper Mill"

TWILTEX LEATHERCRAFT DURATEX WOODTONE

KROYDON COVER IS

Nationally distributed through these recognized Paper Merchants

•

Write them for Specimens and Samples

ALBANY
W. H. Smith Paper Corp.
ALLENTOWN
G. A. Rinn Paper Co.
BALTIMORE
B. F. Bond Paper Co.
BIRMINGHAM
Jefferson Paper Co.
BOSTON
Arnold-Roberts Co.
Storrs & Bement Co.
BUFFALO
Alling & Cory Co.
CHICAGO
James White Paper Co.
CINCINNATI
Chatfield Paper Corp.
CLEVELAND
Central Ohio Paper Co.
COLUMBUS
Central Ohio Paper Co.
DALLAS
Southwestern Paper Co.
DAYTON
Central Ohio Paper Co.
DENVER
Carter, Rice & Carpenter Paper Co.
DES MOINES
Pratt Paper Co.
DETROIT
Central Ohio Paper Co.
GRAND RAPIDS
Carpenter Paper Co.
HAMILTON, ONTARIO
United Paper Mills
HARTFORD
Rourke-Eno Paper Co.
HOUSTON
L. S. Bosworth Co.
KALAMAZOO
Bermingham & Prosser Co.
KANSAS CITY
Bermingham & Prosser Co.
LONDON, ONTARIO
United Paper Mills
LOS ANGELES
Zellerbach Paper Co.
MILWAUKEE
Dwight Bros. Paper Co.
MINNEAPOLIS
Wilcox-Mosher-Leffholm Co.
MONTREAL, QUEBEC
McFarlane Sons & Hodgson
NASHVILLE
Clements Paper Co.
NEWARK
Lathrop Paper Co.
NEW HAVEN
Storrs & Bement Co.
Rourke-Eno Paper Co.
NEW YORK CITY
Alling & Cory Co.
Lathrop Paper Co.
Miller & Wright Paper Co.
Milton Paper Co.
Bulkley, Dunton & Co.
OMAHA
Field-Hamilton-Smith Paper Co.
PHILADELPHIA
Thos. W. Price Co.
J. L. N. Smythe
PITTSBURGH
Alling & Cory Co.
PROVIDENCE, R. I.
Storrs & Bement Co.
PORTLAND, OREGON
Zellerbach Paper Co.
RICHMOND, VA.
B. W. Wilson Paper Co.
ROCHESTER
Alling & Cory Co.
ST. LOUIS
Tobey Fine Papers, Inc.
ST. PAUL
Wilcox-Mosher-Leffholm Co.
SALT LAKE CITY, UTAH
Zellerbach Paper Co.
SEATTLE, WASH.
Zellerbach Paper Co.
SPOKANE, WASH.
Zellerbach Paper Co.
SPRINGFIELD, MASS.
Paper House of New England
SAN FRANCISCO
Zellerbach Paper Co.
TOLEDO
Central Ohio Paper Co.
TORONTO, ONTARIO
United Paper Mills
WASHINGTON, D. C.
Barton, Duer & Koch Paper Co.
WORCESTER
Storrs & Bement Paper Co.

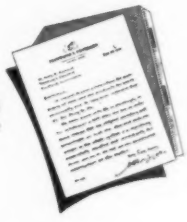
When writing Holyoke Card & Paper Co. please mention Purchasing

Wartime Short Cuts

FOR FASTER, NEATER TYPING

War-rushed businesses have found these uses of Micrometric Carbon Paper a valuable short cut to faster, neater typing:

1. The white, numbered scale keeps the stenographer informed at all times of her exact position on the page. This helps her to plan her spacing so that signatures will not be crowded at bottom of page or perched at top of second sheet.



2. For reports and longer letters, uniform margins at top and bottom of page are assured by using the scale.

3. A cut corner at upper left of sheet permits quick removal of carbon paper, simply by pulling the white scale. There's no danger of smudged fingers, either.

4. Carbon paper wear can be increased by starting letters alternately on the line and half-line. Despite these extra advantages, Webster's Micrometric costs no more than other carbon papers of similar grade.

Webster also makes the famous MULTIKOPY carbon paper and STAR BRAND Typewriter ribbons, and can supply you with carbon papers for gelatin hektograph, and spirit process duplicating machines; carbon-paper ribbons for photo offset work; ribbons and carbons for all Elliott-Fisher, Addressing, Teletype, Adding, and International Business Machines.

★ Winning the War Requires Carbon Paper and Typewriter Ribbons ★

★

For Service and Samples Write:

WEBSTER'S

7 Amherst St., Cambridge, Mass.

CARBON PAPERS and TYPEWRITER RIBBONS

Factory branches in New York, Philadelphia, Chicago, Pittsburgh, and San Francisco

(Continued from page 177)

to 61% with 24 per cent opposed.

On questions pertaining to postwar government controls, there are sharp divisions of opinion. A big majority of 82% is for discontinuing rationing such items as fuel and food after the war, but opinion is virtually divided down the middle on whether control of prices should be continued. The public voted 51% to 37% against postwar continuation of wages and salary control.

Private management of business received a vote of confidence on the question: "Do you think that business companies will do a better job if they are allowed to keep on under their own management, or if the government takes them over and runs them completely?"

Excluding the 19% answering "don't know," the vote in favor of business management was almost 5 to 1—67% of those questioned answering "yes"; 14% answering "no."

Business also appears to be more than holding its own on the question of "more or less control" by government. Forty-seven percent of the people want less control of business by government; 30% want more. These figures represent a rise of one percent in those favoring less control and a decline of 8% in those wanting more control when this question was asked in October 1941. The difference is found in the "don't know" column which rose from 16% to 23%.

WAR EXPENDITURES

War expenditures by the United States Government reached a new high of $7,112,000,000 in the month of March. This was $1,031,000,000, or 17.0 percent, higher than in February. The previous high for monthly war expenditures, January 1943, was exceeded by 13.7 percent, or $858,000,000.

The average daily rate of expenditures in March was $263,400,000 compared with $253,400,000 in February, an increase of 4 percent. The daily rate is based on the twenty-seven days in March and the twenty-four days in February on which checks were cleared by the Treasury.

LIGHT BULB AND TUBES REGULATIONS AMENDED

Household users of electric light bulbs, and other users in the same class, are assured a fair share of supply of these products through equitable distribution provided for by General Limitation Order L-28 as amended.

The order now limits the application of preference ratings in the distribution of incandescent lamps and fluorescent or glow discharge lamps to ratings of AA-5 or higher. Such ratings are applied primarily to military, export, and industrial orders. Previously, all rated orders were eligible for preferred consideration.

Under the terms of CMP Regulations 5 and 5-a, effective April 1, a number of users of light bulbs—particularly in the commercial field and including stores, theatres, and night clubs will be able to

(Continued on page 180)

Prominent Users of Strathmore Letterhead Papers: No. 36 of a Series

Paper, too, Plays its Part in

BUILDING *for the* FUTURE

With E-Award efficiency, Sylvania Electric Products, Inc. is producing for war...planning for peace. Its magic devices in radio and electronics...so essential today in the handling of planes, submarines, warships and mobile land units...will play an even more vital part in our post-war world.

To tell their dramatic story to employees, to customers and contacts, Sylvania relies on the *quality* of Strathmore Papers: Strathmore Fiesta for their Army-Navy "E" Award announcement; Strathmore Alexandra Brilliant for the Company letterhead.

Your letterhead is a salesman of *your* business...present and future. Be sure of its quality. A letter written on Strathmore Paper costs only a small percent more than a letter written on the cheapest paper you might buy. Such plus value for so little cost difference, is sound business judgment. Write us for detail of "letter" cost.

Strathmore Papers for Letterheads: Strathmore Parchment, Thistlemark Bond, Bay Path Bond, Strathmore Bond, Strathmore Script, Alexandra Brilliant and Strathmore Writing.

STRATHMORE *MAKERS OF FINE PAPERS*

Strathmore Paper Company, West Springfield, Massachusetts

PAPER IS PART OF

TODAY'S PICTURE

Current Strathmore advertising points out how essential paper is to the war effort, features leading industries that use Strathmore in their Victory programs, stresses the point that good letterheads help maintain the reputation every firm is guarding today.

★ ★ ★

This series appears in:

FORTUNE
TIME
BUSINESS WEEK
UNITED STATES NEWS
NEWSWEEK
FORBES
ADVERTISING & SELLING
TIDE
PRINTERS' INK
SALES MANAGEMENT

When writing Strathmore Paper Company please mention Purchasing

If your desk looks like this—

You need this—

IS YOUR DESK a "junk heap"? This morning, did you find it so piled with details that you didn't know where to start?

Then it's a safe bet that you can use some of the ideas in Hammermill's new little book, "Recipe for an Orderly Desk."

Written by William Feather, business writer and editor, this book shows you simple, practical ways of putting things down in writing that will help you organize your day's work—remind you what to do and when, simplify the routing of information to the proper people, eliminate time-wasting interruptions and other details that keep you from doing your best work.

Get your copy now. It's free.

HAMMERMILL Papers

Hammermill Paper Co., Erie, Pa., Dept. PU-MAY
Please mail me a free copy of "Recipe for an Orderly Desk."

Name .....

Position .....
(Please attach to your company letterhead)

(Continued from page 178)

obtain A-10 ratings. This would have placed them in a preferred position over residential users in procurement of light bulbs. L-28, therefore, in its tightening of rating requirements, maintains the present equilibrium. It assures that the light bulbs that remain after prior orders (AA-5 or higher) are filled can be distributed fairly among all classes of civilian users.

Further assurance of equitable distribution is provided through another amendment to L-28 which implements this purpose. It provides that the manufacture and delivery of light bulbs and tubes will be controlled now through WPB scheeduling, thus setting up a flexible control over production.

IBM DEVELOPS JOBS FOR BLIND

Michael Supa, who has been totally blind since the age of two years, has been appointed to the executive staff of International Business Machines Corporation to coordinate a broad program for developing jobs for blind, crippled and other handicapped workers in order to release able-bodied men for the armed services. Following his graduation from Colgate University and Cornell Graduate School, Mr. Supa was appointed a year ago as an instructor at the main IBM plant at Endicott, N. Y. to carry out a new departure in the IBM industrial training and employee educational program. Here, in order to broaden the field for employment of the blind, Mr. Supa went into the factory and worked at various jobs in order to determine whether they could be done successfully by the blind, and assisted in hiring blind persons and training them for the work.

SMALLER WAR PLANTS CORP.

The Smaller War Plants Division of the War Production Board, together with its personnel, files, records, and equipment, departmental and field, has been transferred to the Smaller War Plants Corporation, under the supervision of the chairman of the War Production Board.

PLASTIC OFFICE PARTITIONS

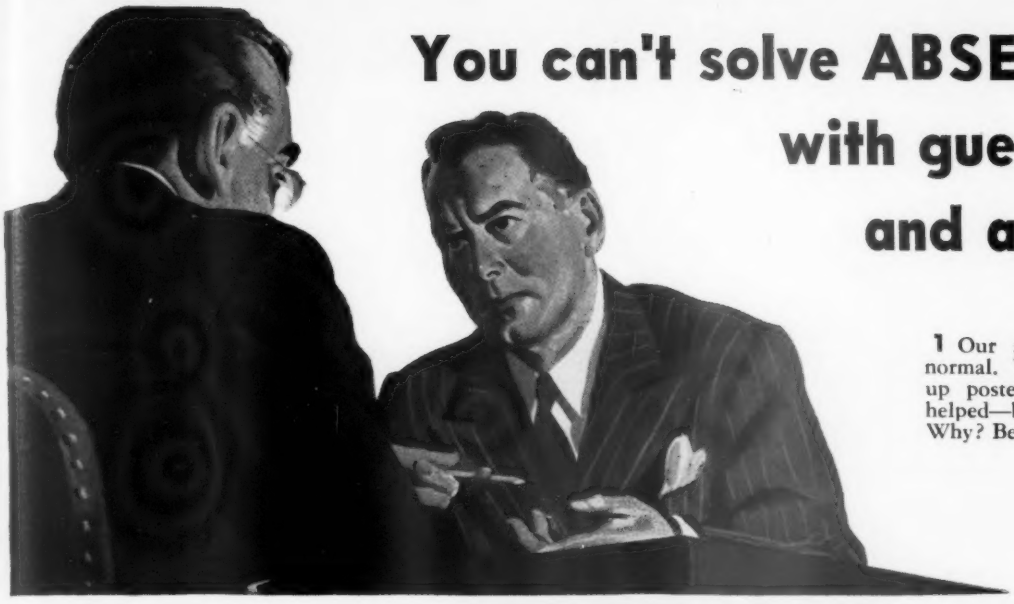
Because of the development of a plastics and wire screening material to reduce wartime danger from flying glass, the post-war business executive will be able to change the size and arrangement of his private office as easily as his wife now shifts the living room furniture.

The war-born glazing which promises to add new flexibility to post-war offices in Reinforced Vuelite, two sheets of transparent cellulose acetate plastic laminated to standard wire screening. Developed by the Plastics Division of Monsanto Chemical Company in cooperation with the United States Navy, it reduces the danger of flying glass during air raids or enemy bombardment.

Use of the material in postwar offices was predicted after the Ensign-Bickford

(Continued on page 183)

You can't solve ABSENTEEISM with guess-work and arm waving!



1 Our absenteeism was 4 to 5 times normal. We pulled time cards, we put up posters, we offered prizes. All this helped—but it didn't solve the problem. Why? Because we didn't know the causes.

2 Then we found a way to determine the causes. A simple, practical system of obtaining a full report on every absence, *got* the facts—and got those facts to the right people—quickly.

3 Standard's Absentee Report System gave us a true picture of our whole absentee situation. It brought to light the chronic cases—departmental problems—the current causes and trends.

4 Complete information enabled us to set up corrective measures. Minor causes were eliminated at once. Others are responding to our efforts. Today absenteeism is cut in half and still going down.

STANDARD'S ABSENTEE REPORT SYSTEM UNCOVERS THE CAUSES AND TRENDS OF ABSENTEEISM

Management, labor and government officials agree that the answer to absenteeism lies in cool-headed consideration of causes. To determine causes, you must have and use ADEQUATE RECORDS.

The Standard Absentee Report System provides complete records, easily tabulated for analysis and immediate action. Trends can be detected and causes corrected before they become serious. The system centralizes the job of fact-finding, furnishing information to all departments concerned—giving a complete time-loss record. A locked-in file copy protects original records against loss or alteration. Knowing that a complete written report is made out for every absence, workers think twice before they go A.W.O.L.

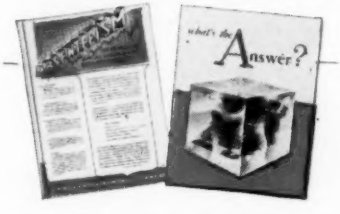
MAIL THE COUPON for our presentation—"Absenteeism." We will also send "What's the Answer?" a 28-page book telling how to streamline paper work and speed war production through Standard's better and faster ways of writing all types of machine or handwritten records.

THE STANDARD REGISTER COMPANY • DAYTON, OHIO

On the Pacific Coast, address Sunset McKee-Standard Register Sales Co., Oakland, Calif., and in Canada, Crain Printers, Ltd., Ottawa, Ontario.

Standard Systems

OF INDUSTRIAL CONTROL



STANDARD is the ORIGINATOR, in continuous business forms, of these distinctive marginally punched holes. They are Marks of Identity of the continuous forms of The Standard Register Company—"the Forms with the Punch."

THE STANDARD REGISTER COMPANY
503 Albany Street, Dayton, Ohio
Send me your presentation on "ABSENTEEISM," and "What's the Answer?" containing facts on how to eliminate useless forms, cut red tape and speed war production.

NAME .....

FIRM .....

ADDRESS .....

When writing The Standard Register Company please mention Purchasing

New

A Permanent Black Record Ink

"MICRO-FILM BLACK"

Quink

Writes black . . . stays black!

Intensely black, quick-drying "Micro-Film Black" Quink is ideal for every commercial use . . . contains solv-x which eliminates 65% of all pen troubles!

In "Micro-film Black" Quink, Parker scientists have achieved an extra dense black ink. It *writes* black . . . *stays* black! Strokes are clean and sharp, without feather edges.

Commercial users will find "Micro-film Black" Quink ideal for all office use. It is especially fine for V-Mail and such processes as *Recordak* because it *photographs perfectly*. In addition, records, checks, books, and documents are given a water-resistant permanency attained by few inks.

All Parker Quink contains *solv-x*. This exclusive Parker ingredient gives pens vital wartime protection—eliminates the cause of 65% of all pen failures. *Solv-x* ends gumming and clogging, and prevents corrosion of metal and rubber parts. Steel pens, especially, last longer and write better.

Save money on pen repairs and replacements. Order Parker Quink today in economical pints and quarts. For complete information, write: Box P-5, The Parker Pen Company, Janesville, Wis.

Parker Quink comes in 7 permanent colors: Micro-film Black, Blue-Black, Royal Blue, Green, Violet, Brown, Red. 2 washable colors: Black, Blue. Available in 2 oz., 4 oz., pints, quarts and gallons. Prices extremely reasonable.

★ Permanent

★ Photographs perfectly

★ Contains solv-x

PARKER Quink

THE ONLY INK CONTAINING PEN-PROTECTING SOLV-X

Copr. 1943, The Parker Pen Company

(Continued from page 180)

Company installed it in office doors of its Simsbury, Conn., plant which manufactures safety fuses.

The installation originally was simply a safety measure and the glazing was placed in conventional wood doors. Executives, however, were impressed by its combination of light weight, strength and resistance to breakage. Installed in suitable, light-weight frames, they suggested, it should be an ideal material for office partitions.

As manufactured for war uses, Reinforced Vuelite has a transparency about equal to that of a screened window of glass. In this form, it provides some degree of privacy for Ensign-Bickford executives at the same time it allows them to keep an eye on the outer office. For post-war office partitions it could be made less transparent. Tests indicate it has sufficient strength to withstand the blast of a 150 pound bomb exploded only eight feet away.

Peacetime Packaging Inadequate for War

Charles L. Sheldon Reviews Container Situation

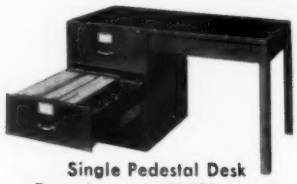
The absolute indispensability of adequate packaging for all war materials—ordnance, ammunition, parts, food, medicinal products, and other essential things in a list that approximates 800,000 different items, was forcefully emphasized at the Wartime Packaging Conference and Exposition sponsored by the American Management Association, at the Hotel Astor, New York, April 13 to 16 inclusive.

That paper and paper products, coating materials, wood and metal containers, fabric and fibre containers and packing materials are of prime importance in the war effort was stressed by industrial and war department speakers and dramatically exemplified by the exhibits in the huge exposition hall. Of especial interest was the Navy exhibit demonstrating new methods of packing and packaging of Naval supplies to assure their delivery at their ultimate destination in a usable condition. The exhibit graphically illustrated the problem of protecting supplies from the hazards of handling and shipping and climatic conditions to which they are subjected in the logistics of global warfare. And of no small moment were the examples showing how the job should not be done.

The importance of proper packaging was tersely stressed in the statement of Rear Admiral Young that "Packaging failures have the same result as if our supplies were destroyed by the enemy or lost." This declaration was substantiated by that of an Army officer who said "The Production isn't worth a whoop unless the end products of the production are delivered when they are needed, where they are needed, in A-1 conditions. It is an

(Continued on page 184)

Double Counter Height Desk
Capacity up to 57,000 records



Single Pedestal Desk
Capacity up to 21,000 records

to simplify control of Personnel . . .

In the Yard – or Factory – or Office, your Personnel Department is a vital feature in the war effort. To solve labor shortages and control absenteeism, it must have complete, accurate facts available, with finger-tip control.

That is why *VISI*record has installed more Personnel records in the past 8 months than in *two years previous!* Companies like Studebaker Corporation, American Can Company, Royal Typewriter Company – hundreds of firms engaged in war production – have found *VISI*record, for Hand or Machine Posted Records, indispensable to their Personnel Departments.

- *Because VISIrecord saves man-hours.*
- *Because VISIrecord saves space.*
- *Because VISIrecord is more flexible.*
- *Because VISIrecord ensures* MAXIMUM *efficiency with* MINIMUM *effort.*

"THE WORLD'S FASTEST VISIBLE RECORD KEEPING SYSTEM"

Literature illustrating visible control of

C. M. P.

PRODUCTION
INVENTORY
PURCHASE
PERSONNEL

available upon request. Write Dept. P-3 today!

VISIBLE INDEX CORPORATION
535 FIFTH AVENUE · NEW YORK, N. Y.
OFFICES IN PRINCIPAL CITIES

When writing Visible Index Corporation please mention Purchasing

This is a war of efficiency—just as better arms make better fighting armies—so better papers increase the efficiency of thousands of unheralded men and women at typewriters, accounting machines and general office work.

Parsons Papers are doing their bit by providing the right forms for all procedures . . . the right papers for records, systems, routines, etc.,—quality papers (made from cotton fibers) that ease eye-strain, work smoother and faster, file better and last longer.

Printers and Lithographers who have your interest at heart will recommend the right—

Parsons Paper

Specialized for Modern Business

BOND PAPERS	*For correspondence, documents and forms of every description*
LEDGER PAPERS	*For accounting systems, records, certificates and other permanent needs*
INDEX BRISTOLS	*For machine accounting, index record cards and general uses*
TECHNICAL PAPERS	*Made to your specifications for all types of special requirements*

PARSONS PAPER COMPANY • HOLYOKE, MASS.

STAR STAPLERS

The best way to fasten papers. Needed on every desk. Use economical standard size staples. Built to last. Guaranteed against defects.

STAPLERS STILL AVAILABLE On Priority Orders.

Essential industries needing paper FASTENERS and TACKERS can still be supplied.
Model S 122A shown above lists for only $1.90.

Write for catalog

STAR PAPER FASTENER CO., NORWALK, CONN. Dept. P

(Continued from page 183)

extremely vital part of our whole Army supply program."

One of the outstanding features of the convention was the assignment of an entire afternoon to a questions and answers session on "Packaging for the Fighting Forces." At this session, presided over by E. A. Throckmorton, Director of Research, Container Corporation of America, the rostrum was occupied by a panel of government authorities headed by Eldo Tomiska, Deputy Director, Containers Division, War Production Board.

Members of the panel answered questions all afternoon on packaging needs and problems, material supplies, and specifications, submitted by the huge audience.

New Responsibilities for Pur. Agents

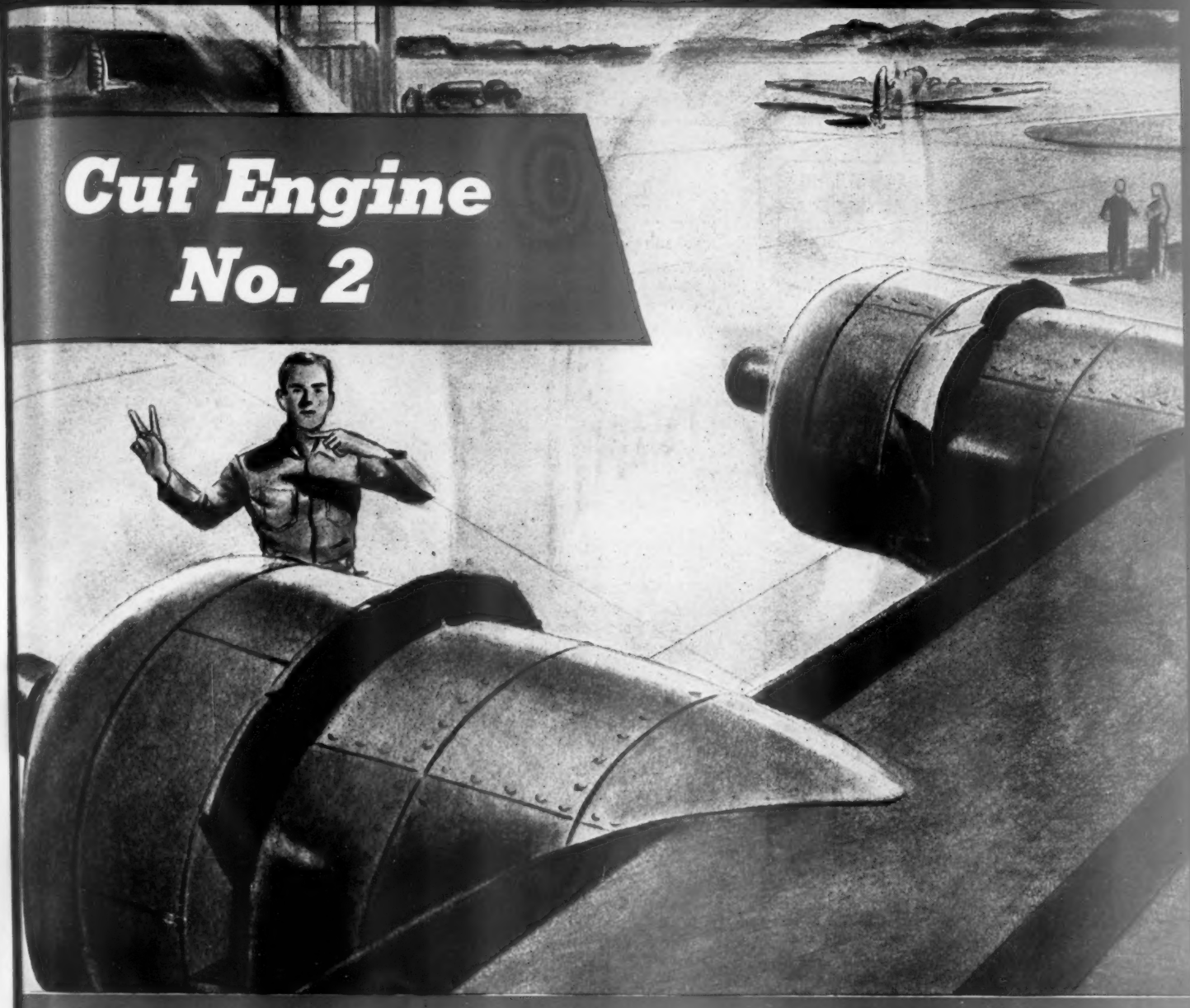
The session among other things demonstrated that the Purchasing Agent has serious responsibilities in procuring effective coating and packaging materials. In fact one of the principal speakers at the convention was Charles L. Sheldon, Purchasing Agent, Hood Rubber Co., Watertown, Mass., and former Chief of the Containers Division of the War Production Board. In this connection it is also of interest that various speakers stressed the role of the Purchasing Agent in packaging and the procurement of materials therefor.

Harold Colman, Packaging Manager, United Drug Company stated that "When the actual shortages began and the War Production Board began to issue orders, we got right down to the meat of the proposition, and I want to say right here that our Purchasing Department was able at that time to protect our firm's packaging within the law in a very splendid manner so that we were not thrown immediately into the whirl of rushing out and picking up the first type of package that appeared on the market."

F. D. Cummings, Assistant to the Vice President, John Morrell & Company, stated that five years ago the "Purchasing of packaging materials had become more or less routine, with the Purchasing Department supplying operating needs at the lowest possible cost consistent with quality and service. Today," he continued, "Packaging has taken on new responsibilities. We are not only obligated to our government to package its meats to withstand all conditions of transportation, but we are also expected to package for civilian needs, using such materials as are allotted to the industry. The first trend I should like to mention is that our government is asking many questions as to why we need certain materials vital to the war effort. They are asking you to tell them by filling out numerous forms. Well, some Purchasing Agents may be getting gray hairs finding the answers, but I believe that most packaging materials are being obtained with the forms properly filled out."

And Kenneth P. Morehead, Production Manager, Tung-Sol Lamp Works, stated that after encountering various difficulties, in addition to procuring proper packaging materials, "the designing of tote

(Continued on page 186)



SAVE to WIN

Buy War Bonds!

Flight apron mechanics at one of the country's big airplane plants can't talk to each other over the roar of the powerful engines they are tuning, so they speed their work with signals like this. ● Such a gesture's as easy to understand as one of the production signals flashed continuously in war plants from coast to coast by office and factory forms printed on the six easy-to-see, hard-to-overlook wartime colors of

HOWARD BOND

Also available in White and Ivory . . . for letterheads

YES, GEORGE, AN ACE STAPLER IS A MARVELOUS PIECE OF WORKMANSHIP
YOU TELLING ME! HAVEN'T WE USED THEM FOR YEARS AND KNOW THEY ARE TOPS?

That conversation expresses the sentiment of countless users of Ace Staplers, who know from experience just how good they are. This universal satisfaction is what can be expected of any Stapler bearing the name "Ace", for Ace Staplers are designed and built according to the highest standards of watch-like, precision engineering. This fine workmanship, plus the best materials obtainable, give to Ace Staplers those smooth, efficient, reliable operating qualities so greatly appreciated and admired by those who use them.

In war plants, offices, factories, Government Departments, drafting rooms and a host of other places, where valuable papers and documents must be handled *quickly* and *efficiently*, Ace Stapling Equipment is contributing its bit in furthering the war effort.

ACE FASTENER CORPORATION
3415 N. Ashland Ave., Chicago, Ill.

SOLD THROUGH DEALERS EXCLUSIVELY

ACE The WORLD'S FINEST
Stapling Machines
FOR EVERY PURSE AND PURPOSE

(Continued from page 184)

trays was usually left to the Purchasing Department and the factory department most concerned."

800,000 Items Involved

In the roundtable discussion the fact was elicited that commercial export specifications are inadequate to meet conditions under which war material is being shipped, handled and stored in the field, and therefore the government has found it necessary to impose rigid specifications for packaging. It was stated that some 800,000 different items are involved, and it has been impossible to create special specifications for each of the items that go to make up a list of this sort. To date, the Ordnance Department has issued 1000 regulations, and the Quartermasters Corps about as many more.

It was stated that all export containers are required to have metal strapping, "this being one of the most important applications we have." The round wire strapping is preferred on wood containers, and the black steel strapping is preferred for fibre containers.

Army-Navy General Specification

Special attention was called to Army-Navy General Specification for Packaging and Packing for Overseas Shipment, prepared by the Container Co-ordinating Committee. This is known as U. S. Army Specification 100-14A and U. S. Navy Specification 39P16a, issue of February 15, 1943. Copies may be obtained from the Bureau of Supplies and Accounts, Navy Department, Washington.

It was pointed out that this General Specification was primarily designed to serve in those cases where there are no individual packing specifications, and to serve as a general guide in the development of individual packing specifications. This new issue is being written into all new contracts, and old contracts are being amended to include reference thereto.

The Specification states that "Each branch of the service have their particular specifications which have been found most satisfactory for specific applications."

It was stated that if there is no individual specification, packaging must be in conformance with No. 114-A. In general, the requirements for the Navy are the same as for the Army.

In response to an inquiry on greaseproof wrapping material and a list of approved material, it was stated that this is a difficult question to answer. The specification is now in process of being revised. Arrangements have been made with the Forest Products Laboratory, Madison, Wis., to test papers of this kind, and the Laboratory will at a later date issue a list of suppliers who have submitted samples which are found to meet requirements intended.

It was indicated that many protective, wrapping and packaging materials have not been satisfactory. Therefore it is evident that Purchasing Agents will find it necessary to exercise extreme care in their selections and purchases, and that they should be familiar with Army, Navy and other Departmental requirements.

In addition to those taking part in the session devoted to answers and questions on Packaging for the Fighting Forces, the principal speakers were Joseph Givner, executive vice president, Real Silk Hosiery Mills, and vice president of the Packaging Division of the A. M. A.; Charles L. Sheldon, Purchasing Agent, Hood Rubber Company; Watson Davis, Director Science Service, Washington, D. C.; Walton D. Lynch, vice president, National Folding Box Co.; C. A. Southwick, Jr., package research director, Shellmar Products Co.; Frederick S. Leinbach, asst. director, Containers Divn., War Production Board, Washington; Wm. W. Black, Research & Development Branch, Office of the Quartermaster General, Washington; F. D. Cummings, the John Morrell Co.; Stanley W. Burnham, container department, Merck & Co., Rahway, N. J.; Kenneth P. Morehead, production manager, Tung-Sol Lamp Works, Inc., Harold F. Coleman, United Drug Co.; and speakers from the Forest Products Laboratory, Madison, Wis., who conducted a Packaging Conference Course on the uses of various types of containers,

(Continued on page 188)

Straubel
TEXTURIZED
TRADE-MARK REG. U. S. PAT. OFF.
Towels

Check this fact . . . see how quickly and thoroughly a Straubel Texturized Towel will absorb water. Their high absorbency, extra strength, pleasant feel and freedom from lint make them ideal for factories, schools, offices, etc. Save time—save towels—protect public health—a vital contribution to victory. Ask your dealer, or write today for samples.

Straubel
PAPER COMPANY
GREEN BAY, WISCONSIN

Picked for the Job!

QUARTERMASTER MEN "Deliver the Goods"

Provisioning millions of men on dozens of different fighting fronts demands a slide-rule mind and the vision of a seer. Logistics, the army calls it.

Plenty of blood, sweat, and brawn—and brains that can stay on duty 36 hours at a stretch. To be able to think the way the crow flies . . . cut through the impenetrable . . . deliver the impossible. Perfectionists with a dash of inventive genius can serve the Quartermaster's Corps well. And that means *selection*—to the nth degree.

Mimeo users select International Mimeo Script because of its fine bond-like quality. International Duplicator, too, is selected because it works equally well with the Spirit and Gelatin processes.

INTERNATIONAL PAPER COMPANY

220 East 42nd St. *New York, N. Y.*

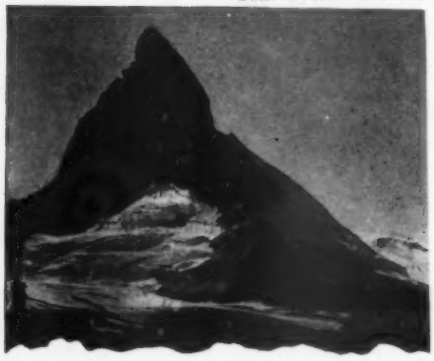
PAPERS FOR PRINTING AND CONVERTING

BUY MORE WAR BONDS

When writing International Paper Co. please mention Purchasing

an all time high

Photo Courtesy
Swiss Federal Railroads



PROVED over and over in peacetime, PINNACLE Carbon Paper is hitting an ALL TIME HIGH for performance and sales by filling the multiplied correspondence and recording requirements of a nation at war. Specifically, Pinnacle Carbon Paper gives you:

1. Sharp, clear and clean carbon copies—and no smudges.

2. Long life and uniform wear down—70 to 80 writings from every sheet.

3. *Extra long life* because each sheet is cut an extra half inch in length. After the sheet has begun to wear, the typist just reverses the sheet—turns it bottom up. Thus the top becomes the bottom and the extra half inch causes the new typing to strike on a fresh carbon paper surface, *between* the lines of previous impressions.

4. Soil proof QUICK VENTILATION of carbon copies. Two diagonally opposite corners of the carbon sheet are clipped off. This enables the operator to grasp the upper left hand corner of the carbon copies and separate them from the carbons in a single, quick operation.

PINNACLE
CARBON PAPER

IS PRICED TO GIVE YOU A REAL MONEY'S WORTH. Ask your dealer for samples or contact the Columbia Office nearest you.

COLUMBIA
RIBBON & CARBON
MANUFACTURING CO., INC.

Main Office & Factory: Glen Cove, L. I., N. Y.
58-64 West 40th Street, New York City
204 Dwight Building, Kansas City, Mo.
227 South LaSalle Street, Chicago, Ill.
155 West Congress Street, Detroit, Mich.
227 East Michigan Street, Milwaukee, Wis.
200 Plymouth Building, Minneapolis, Minn.
107 Union Street, Nashville, Tenn.
1508 Fox Building, Philadelphia, Pa.
208 Standard Life Building, Pittsburgh, Pa.
205 East 6th Street, Cincinnati, Ohio
(Harris-Moers Company)
Also: London, England; Sidney, Australia

(Continued from page 186)

and the techniques of weather and corrosion prevention.

Vice President Walton D. Lynch of the National Folding Box Co., said in part: "Despite wishful thinking, or grumbling or complaining, this is a period when we must 'put first things first.' Applied to packaging this simply means that virtually all metals, foils, plastics, and other materials formerly so plentifully available for packaging purposes, are now vitally needed and must be reserved for the use of our armed forces now fighting on foreign battlefields.

Reviews Container Situation

Purchasing Agent Charles L. Sheldon of the Hood Rubber Co. said in part: "A packaging revolution was started on February 11, 1942, when the WPB issued order M-81 restricting the use of metal cans. Since then many other orders relating to containers have been issued and more, no doubt, are in the making. The reasons for these orders are simple. Steel, tin, rubber and other materials have to be saved for implements of war.

"Last year at this conference I stated that anyone could change to paper, wood and glass and not worry about supplies. It certainly looked that way then, but today the picture has changed. WPB orders forced products from metal to other materials, principally paper, wood and glass. Greatly increased requirements of our Armed Services for these same materials, plus a shortage of labor, government ceiling prices on labor and certain grades of lumber and WPB order cutting production of container boards for a period of a couple of months, all have played a part in developing the present situation. That part of the order affecting container boards has been revoked."

Mr. Sheldon stated that the glass in-

Charles L. Sheldon, Purchasing Agent, Hood Rubber Company

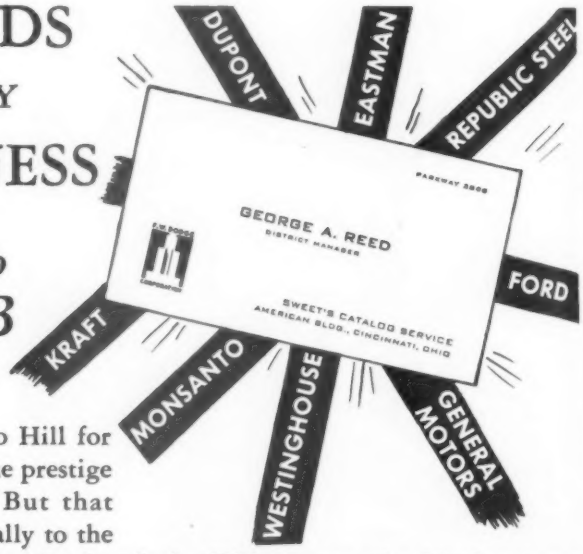
dustry, now producing 90,000,000 gross annually, is about 7% oversold at the present time. "Possibly an inventory control order may soon be issued and certain types of glass containers may be eliminated. At the best I can only foresee a very tight situation for the rest of the year."

The production of fibre drums in Feb-

(Continued on page 190)

HILL CARDS
ARE USED BY
BIG BUSINESS

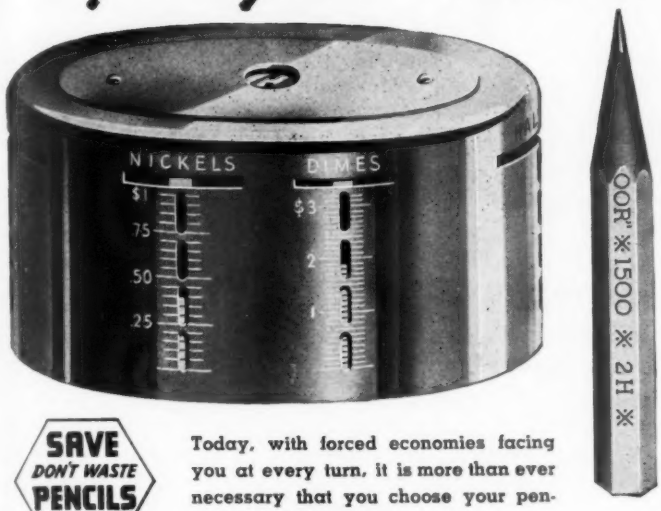
. . . and Can Do a BIG JOB For You!



• Business leaders come to Hill for the rare master touch in the prestige of a Hill-created card. But that "know how" appeals equally to the small firm of high standing. *Both* seek the Hill manner of achieving accent on attention value and interest. • Moreover, Hill "follow-through" pleases the purchasing agent: buying details are minimized — same day shipments on thermographed cards—Economy Case (units of 25 cards) saves 25% waste. Send us your data, and we'll submit suggestions for engraved or thermographed card and letterhead. Give yearly quantities.

R·O·H·HILL INCORPORATED
Engravers and Thermographers
270 LAFAYETTE ST. • NEW YORK, N. Y.
LARGEST MAKERS OF FINE BUSINESS CARDS

SAVE KOH-I-NOORS
they are good to the end



SAVE *DON'T WASTE* **PENCILS**

Today, with forced economies facing you at every turn, it is more than ever necessary that you choose your pencils with infinite care.

KOH-I-NOOR DRAWING PENCILS bring you every pencil quality—smoothness, density of line, accurate grading and long wear.

Send for Booklet No. 11

KOH-I-NOOR PENCIL COMPANY, INC.
373 Fourth Avenue - - New York, N. Y.

BOUQUETS TO THESE GREAT AMERICANS BORN IN MAY!

Five famous men and one courageous woman receive bouquets this month from C. Howard Devildog, Hunt's popular military K-G. Remember, you are a famous American, too, when you increase your War Bond purchases in May!

PATRICK HENRY	May 29, 1736
STEPHEN GIRARD	May 20, 1750
JOHNS HOPKINS	May 19, 1795
RALPH WALDO EMERSON	May 25, 1803
FLORENCE NIGHTINGALE	May 12, 1820
IRVING BERLIN	May 11, 1888

While it is impossible to get pencil sharpeners due to the war, keep the BOSTON name in mind.

C. HOWARD HUNT PEN CO., CAMDEN, N. J.

BOSTON
PENCIL SHARPENERS

We are in the UNFORTUNATE POSITION - - -

We are in the unfortunate position of not being able to take immediate care of ALL the orders for our Millers Falls and Gibraltar Onion Skins at the present time. However, we urge you to

USE MORE
THIN PAPER

in order to save postage, to save typing time, and to save filing space. Use our famous Millers Falls thin papers if you can get them — if not, use the best grade available. Even before the war, more firms were using more thin papers for forms and correspondence. Today — thin papers offer more advantages than ever.

NOTE: *We have a limited supply of Millers Falls and Gibraltar ONION SKIN Sample Books available.*

MILLERS FALLS PAPER CO.
MILLERS FALLS, MASS.

Ask the Old Dutch Salesman he knows a lot about today's Office Problems

CARBON PAPERS INKED RIBBONS

Our men get around to lots of offices; perhaps they've known similar problems to yours. They can probably help to ease your war-burdened personnel by suggesting shortcuts, simplifications, etc.
Ask the Old Dutch Salesman . . . make it a habit . . . there's never any obligation!

WATERS & WATERS BRANCH

- ST. LOUIS, MISSOURI, 511 Locust Street
- SAN FRANCISCO, CALIF., 779 Mission Street

BURLINGTON, NEW JERSEY

L.L.BROWN Bond Paper

MILLS AT ADAMS, MASS.

ESTABLISHED 1849

ADVANCE BOND*
100% New White Linen & Cotton Fibres

L. L. BROWN'S LINEN*
100% New White Linen & Cotton Fibres

FORWARD BOND
100% New Cotton Fibres

GREYLOCK BOND
75% New Cotton Fibres

ESCORT BOND
50% New Cotton Fibres

*Permanent grades

1849

Make NO HUNTING the Rule in YOUR OFFICE

Index With
MAK-UR-OWN
TRADE MARK REG. U.S.A.
CELLULOID
INDEX TABS

and turn instantly to every key reference. MAK-UR-OWN tabs on your active card files, books folders, portfolios, etc., save precious minutes every hour, every day. Inadequate indexing wastes time.

Any index you want — typed, written or printed on the changeable inserts may be slipped into the MAK-UR-OWN strip, cut to length and permanently attached in a moment.

EASY TO USE

See your stationer today and equip every desk in your office with time-saving MAK-UR-OWN Index Tabs.

VICTOR

THE VICTOR SAFE & EQUIPMENT CO., INC.
NORTH TONAWANDA, N.Y.

(Continued from page 188)

ruary, he said, was at the rate of 12 million per year. However, the demands of paint, petroleum, chemical and food products is estimated at 30 million this year. "I understand that AA-2-X is the lowest rating that will obtain fibre drums at the present time," he said. He felt that there is a very good chance that production will improve considerably during the next four months.

Multiwall bags, declared Mr. Sheldon, are rugged containers and can be used to advantage for a wide variety of products. The industry has capacity to make at least 50% more bags than it is now making, and can obtain the paper necessary for increased demands. In the matter of Textile Bags he stated that there appears to be a deficit of several hundred million yards between supplies and demand. However, it is hoped that sufficient cloth will be made available to take care of essential needs. The Tight Cooperage industry is operating at only 50% capacity due to difficulty in obtaining in obtaining staves, and furthermore stave manufacturers claim that ceiling prices are too low. This condition may be corrected shortly by new ceilings in which event all demands can be easily taken care of.

Sees 10% Increase on Veneers

The wooden box industry is operating at about 80% capacity, and the only reason the industry is not operating at a higher level is because of insufficient lumber to meet requirements. Wirebound box production is down due to shortage of veneer. Manufacturers say ceiling prices are too low. There is good reason to believe, said Mr. Sheldon, that ceiling prices may be raised approximately 10% in the near future.

He expressed the opinion that the corrugated and solid fibre container situation was confusing. However, WPB order 421 which had the effect of causing serious dislocations in the industry, has been revoked, and production of container board has increased. "Restrictive orders on Kraft paper or products made thereof may be forthcoming, and there is also a chance that a shipping container and inventory order may be issued," he declared. "I am going to stay with those that think that before the end of this year there will be shipping containers for all."

"The amount of critical materials that have been saved through conversion to paper board is remarkable. At this moment carton makers are sold well ahead, and there isn't enough equipment to take care of the demand for specialty containers for packaging fine powders. Paper can demands are far ahead of production, but new facilities will give some relief in the next 60 to 90 days, and "this also applies to fibre cans."

In conclusion he said "We must cut out all fluff and frills and overpacking, thereby saving materials, labor, and transportation, making available paper and board for other essential purposes. WPB officials are tackling this job in a sensible manner by consulting with industry and asking for their recommendations before issuing any new restrictive orders."

Heretofore, time and gas were wasted when using a hand-wheel type valve for carbon dioxide extinguishers. Hence, for All-Out action against fire a fast and a gas saving type of release was required; an extinguisher that could be controlled while being carried . . . without the delaying time incident to setting a cylinder down to open or close the hand-wheel; a valve that would release the gas just as quickly as it could be shut off. The new C-O-TWO Squeez-Grip valve combines all these requirements.

SQUEEZ-GRIP IS A SENSATIONAL NEW RELEASE

It represents another of C-O-TWO's contributions to fire protection. With over a decade and a half of carbon dioxide fire extinguishing experience, C-O-TWO originated this all-inclusive Squeez-Grip valve.

Carbon dioxide, the fastest non-damaging fire extinguishing agent, can now be released at the base of a fire as *fast as you can close your hand.* Fire is smothered in seconds, without damage to materials or equipment.

C-O-TWO is listed by the Underwriters' Laboratories; fully approved by Factory Mutuals and the Bureau of Marine Inspection and Navigation. C-O-TWO is a registered trademark. To be safe specify C-O-TWO.

C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK, NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada

When writing C-O-Two Fire Equipment Company please mention Purchasing

PLANT EDUCATIONAL MATERIAL

Fire Protection, Broaching, Gas Welding, Contour Sawing and Controls Listed in Subject Matter

In connection with the emphasis placed by the War Production Board on the urgency for conserving tools and equipment, Purchasing Agents may find in the following addition to lists of free educational material previously published, material worth procuring and passing on to department heads:

Fire Extinguishers — New booklet "Maintenance of First Aid Fire Fighting Equipment" has been issued by American-LaFrance-Foamite Corp., Elmira, N. Y. It is divided into six sections: Vaporizng liquid; soda acid; foam; anti-freeze; carbon dioxide extinguishers; and, up-to-date charts giving complete data in condensed form as to extinguisher and engine characteristics, methods of operation, capacity, range of stream, etc. Inspection, upkeep, charging, discharging, and recharging are all thoroughly discussed.

Broaching — "Broaching Do's and Don'ts" is the title of a poster-folder suitable for wall mounting in broaching departments which gives the answers to questions frequently asked regarding broach use. It also summarizes recommendations concerning broach alignment, correct mounting of fixtures, etc., and gives precautions on broaching operations to prevent broach breakage. Colonial Broach Co., P. O. Box 37, Harper Station, Detroit. Ask for Bulletin 290.

Crane Operations—"Controlling Crane Hooks" is the title of a booklet for crane operators, issued by Manning, Maxwell & Moore, Inc., Muskegon, Mich. It details crane operations, and it is felt will be of value in training new crane operators—girls, women, older men and others.

Blow Torches—"How to Light Your Blow Torch", "How to Clean Your Blow Torch", and "How to Solder"; These are the subjects of three pictorial sheets in Turner Topics, designed to help users of blow torches and other gasoline girls, women, older men and others.

Gas Welding and Cutting—"Reconditioning Gas Welding and Flame Cutting Tips" is the subject of a special field service report, prepared by Oakite Products, 22 Thames Street, New York. It outlines a successful method for reconditioning and cleaning gas welding and cutting tips.

Control Instruments—"Prolong Instrument Life" is the theme of a "know-how" article in issue No. 5 of Wheelco Comments, Wheelco Instruments Co., Harrison and Peoria St., Chicago. This company has also issued a Thermocouple Data Book and Catalog which contains practical information for buyers and users.

Contour Sawing of metals, plastics, fiber board: "Doall Contour Saws" is the name of new 265 page textbook on the art of contour sawing, and its cutting tools, available from Doall Service Office. Des Plaines, Illinois. Its contents are of especial interest to industry and the machinist having contour sawing and filing equipment. Over 80% of the text is shown through pictures with charts and diagrams giving easy access to proper speeds and feeds in the shaping of basic materials.

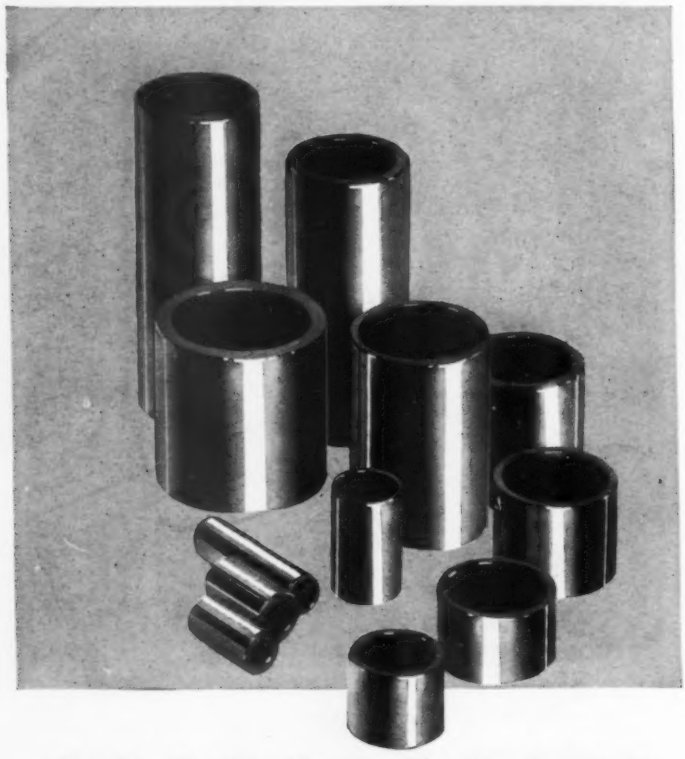
Dimensional Control—Forty large class room charts on Dimensional Control—Theory and Industrial Application, covering basic definitions of such terms as limits, allowance, tolerance, clearance and interference, principles of Go and Not Go gages, etc., tables of fits and tolerances, and illustrations of gaging, are available from The Sheffield Corporation, Dayton, Ohio. A nominal charge of $3.50, transportation prepaid, is placed on the charts. Company reserves the privilege of accepting orders based on the amount of use estimated for each set of charts—this to be indicated on application form which will be furnished.

* * *

EDUCATIONAL COURSE FOR EMPLOYEES

As a means for educating new employees and as a "refresher" course for old employees, a practical school course has been developed by Manufacturers Screw Products, 216 West Hubbard St., Chicago. Sales Manager Robert M. LeGlaire declares the plan has proved effective in speeding production, improving accuracy, and eliminating waste of time and mate-

(Continued on page 196)



STANDARDIZE

save time . . . save money

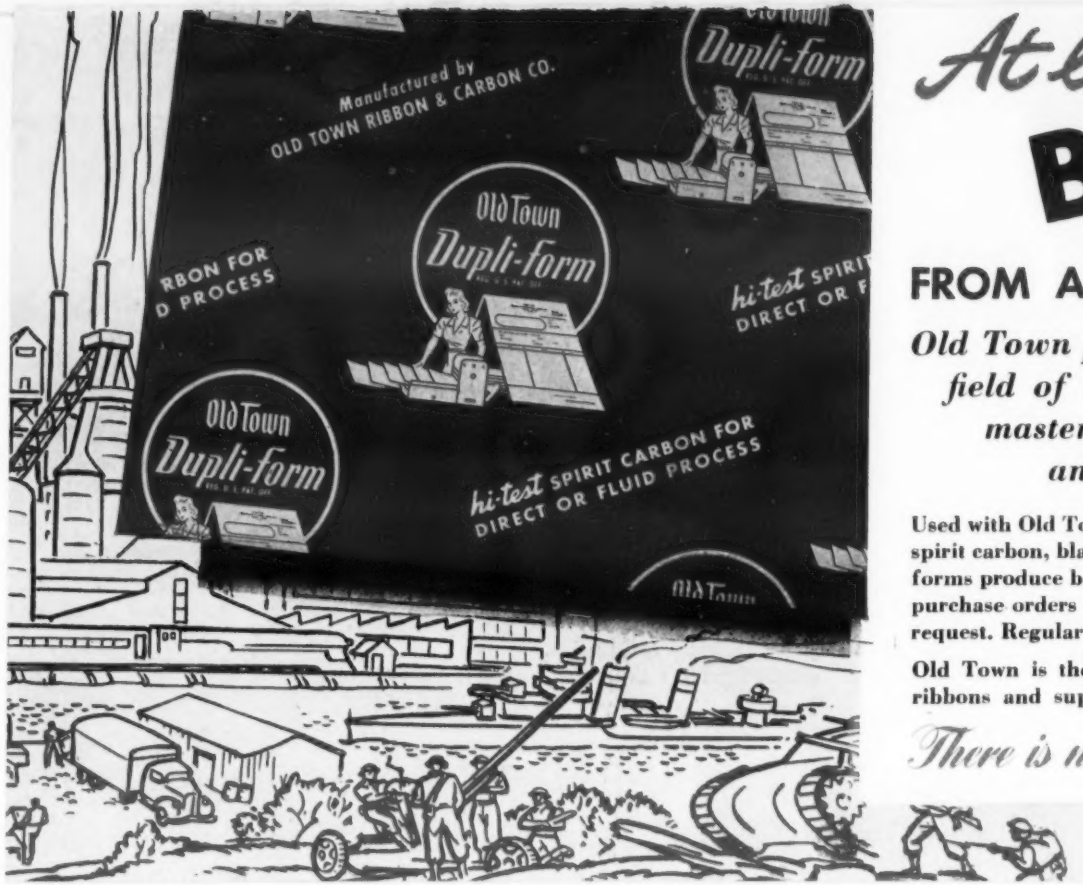
● The trend in manufacturing circles today is toward STANDARDIZATION . . . away from specials. Most concerns found that a comparison of their requirements with the Johnson Bronze list of GENERAL PURPOSE Bronze Bearings revealed the fact that over 90% could be secured FROM STOCK! Very often, a slight change in size or tolerance enabled them to secure all the bearings without delay.

● Why not check your bearing sizes today? Write for a copy of our new catalogue. It lists more than 850 stock sizes for immediate installation. Oil grooves, slots and holes can be quickly, economically added. You will save both time and money — with STANDARDIZATION.

JOHNSON BRONZE
SLEEVE BEARING HEADQUARTERS
450 S. MILL STREET NEW CASTLE, PA.

When writing Johnson Bronze please mention Purchasing

THE SPIRIT OF AMERICA



At last! BLACK *copies*

FROM ANY SPIRIT DUPLICATOR

Old Town presents another FIRST in the field of Spirit Duplicating — Black master units, black Dupli-forms and black spirit carbon.

Used with Old Town BF duplicating fluid, the new black Hi-Test spirit carbon, black Hi-Test master units or black Hi-Test Dupli-forms produce beautiful black copies. Ideal for orders, invoices, purchase orders and office systems. Specimens and prices upon request. Regular standard colors available as usual.

Old Town is the world's leading producer of carbon papers, ribbons and supplies for Spirit and Hectograph duplicating.

There is nothing better in the market

CLEAN ERASURES
ECONOMY

Make OLD TOWN *Your Duplicating Supply Headquarters*

As the world's largest producers of spirit and hektograph carbons, ribbons and supplies, Old Town has much more to offer than the products themselves. Old Town's technical staff and Analytical Departments have been the authoritative source of information on spirit and hektograph duplicating problems for many years. Most of the new developments in spirit and hektograph carbons and ribbons have come from Old Town's laboratories where the lights burn late in the interest of research and to solve the specific problems of individual users.

Old Town's facilities are at your disposal. Just write on your letterhead to:—

Below is a partial list of Old Town Products

STRATOSPHERE CARBON
SABLE CARBON
DOUBLE DUTY CARBON
HI-TEST NOISELESS CARBON
ACCOUNTANTS' CARBON
OLD TOWN HERMETIC RIBBONS
OLD TOWN BRAND RIBBONS
CROWFOOT RIBBONS
HAND CLEANSING CREAM

Old Town makes outstanding inked ribbons and carbon papers for every conceivable use.

Old Town
RIBBON & CARBON CO. INC.
Foremost Makers of Ribbons and Carbons for Every Use

750 PACIFIC STREET, BROOKLYN, NEW YORK, N. Y.

CHICAGO · SAN FRANCISCO · LOS ANGELES · HOUSTON · BOSTON · PITTSBURGH · KANSAS CITY · ST. LOUIS · DETROIT · NEW ORLEANS · BIRMINGHAM · ATLANTA · MINNEAPOLIS

IF IT'S INK ON CLOTH OR INK ON PAPER OLD TOWN MAKES IT

DAWN-*Zenith of Perfection*

THE CARBON THAT WILL NOT *Curl*

Tops all others for -

FLEXIBILITY
EASY HANDLING
WEARING QUALITY
SHARP IMPRESSIONS
PERMANENT CLEAN COPIES
CLEAN ERASURES
ECONOMY

Below is a partial list

"TURN IT SLOW... or you'll wreck the place!"

EVEN the greenest new worker knows a valve when he or she sees it—but they have to be told the right way to open and close valves, particularly those that control high pressure or high temperature or both.

Sudden operation may damage the system, even cause explosions—with resultant injuries or even death. But slow operation or the use of by-passes—to check velocity or admit pressure gradually, or warm up the line ahead—is the way to safety and long life of equipment.

Valve instructions and check-ups, based on National Safety Council recommendations, are needed in many plants today to assure valve safety and prevent production breakdowns.

Reading-Pratt & Cady, a division of American Chain & Cable Company, Inc., stands ready to conform with specific suggestions regarding valve purposes and capacities, and with advice regarding the safety and effectiveness of individual valve installations.

Managers and foremen are doing their part by telling workers how to operate valves and warning them to "handle with care."

Reading-Pratt & Cady Valves are among the many products we build for industry, transportation and agriculture, essential in peace, vital in war.

National Safety Council Offers these Suggestions on Valve Safety

1. Install valves which are equal to the job in design, materials, and construction.
2. Operate valves slowly or use by-pass. Valves should be locked if there is any possibility of unauthorized manipulation which would lead to accidents. Be sure to lock valves leading to boilers in which men are at work and valves on lines where repairs are being made. Place warning signs near such valves.
3. Don't remove valve wheels from valves—particularly those at danger points calling for emergency operation.
4. Don't turn a valve stem with a wrench. This may make it impossible to operate the valve either by wrench or wheel.
5. Inspect frequently valves subjected to unusual strain from excessive pressures and temperatures and valves weakened by corrosive gases and liquids.

The American Chain & Cable Company is happy to cooperate with the National Safety Council in its nation-wide campaign to "Save Manpower for War-power"—which is now being conducted at the request of President Roosevelt.

ACCO TRADE MARK

In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT, CONNECTICUT In Canada—Dominion Chain Company, Ltd. • In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd.

Aircraft Controls, American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Owen Springs, Page Fence and Welding Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes

When writing American Chain & Cable Company, Inc. please mention Purchasing

(Continued from page 192)

rials. The school sessions which cover a two-hour period each week are open to all employees, and more than 75% have attended regularly. Talks by guest speakers are supplemented by movies (when available), factory tours, and written tests.

SIX STEPS IN SALVAGING MACHINE TOOLS

Worn, damaged and overage machine tools from various Westinghouse Electric and Manufacturing Company plants are returned to the Company's Nuttall Works, Pittsburgh, Pennsylvania, for rehabilitation.

Machines already handled under this repair plan include turret lathes, engine lathes, vertical millers, shapers, drill presses, boring mills, internal and external grinders ad screw machines.

To insure prompt delivery of the most urgently needed tools a scheduling system has been set up to class the job A, B or C, according to shop priority.

Here are the six principle steps taken to return these veteran tools to their battle lines.

1—As soon as received, the tools are uncrated and outside surfaces thoroughly cleaned.

2—Next the machine is completely dismantled and all parts are tagged and identified as to machine and order number. All parts are then cleaned.

3—Each part is carefully inspected to see if it is suitable for re-use. If not up to standard a new part is furnished. If the part cannot be purchased it is made.

4—Ways, vees or other surfaces which require machining are then accurately scraped. While this work is being done replacement parts are being gathered at the assembly point.

5—The same careful workmanship goes into the reassembly of the tools as in their original building. After assembly the machines are given a run in test and then a final check.

6—The final step is repainting. The body or machine proper is painted machine tool gray, while starting levers and operating parts are painted a contrasting buff. After a final complete check the machines take their places on the production lines.

BRAZING AND HARDENING HIGH-SPEED TIPPED TOOLS

Conservation of critical high speed steel has been responsible for furnace brazing and hardening of high-speed steel tipped tools at General Electric's Schenectady Works. While the practice is not yet in full production, sufficient work has been done to predict its success.

Hardness tests of the high-speed steel tip indicate a hardness of 64-65 on the Rockwell "C" scale. While no complete life tests have been made on tools thus far, tests of forming tools on stainless steels at 120 surface-feet per minute have been very satisfactory. Several other tools, such as reamers, planing tools, dovetailed forming tools, and cut-off tools are under test.

SEEK TO CONSERVE CUTTING TOOLS

The present high loss of cutting tools resulting from misuse by inexperienced war production workers can be reduced through shop education, George H. Johnson, Director of WPB's Tools Division, announces.

"Cutting tools are now being used by approximately ten million war workers, many of whom never handled such tools before," said Mr. Johnson. "Deliveries of these tools, used for cutting metal in making guns, tanks, planes and countless other war items, are approximately four months behind schedule. With the demand so greatly outstripping the supply, every tool that is broken or dulled through careless handling means less war production. Workers can make a direct contribution to winning the war—over and above their regular tasks—by learning how to take care of their tools.

Cutting tools are perishable even under normal conditions and their lives have been shortened by the high speeds and heavy feeds of war production, Mr. Johnson stated. There has always been some preventable spoilage, he said, but the loss is now very great because millions of newly recruited workers are using these tools. Naturally they have little idea of their cost and they have not had time to learn the techniques and practices that are almost second nature to experienced workmen. The most commonly used cutting

(Continued on page 198)

NOW! IT'S HERE

A NEW SENSATIONAL DESIGN FOR leather V-BELTS

Schieren engineers, after years of research, have discovered the way to provide the tenacious pulling power of flat leather to V belts. Flat leather side walls which grip the sheaves of the pulleys permit the belt to run slack, give longer life and reduce wear on bearings and machinery.

Two years of actual service under wartime pressure have proved the value of this invention in V leather belting.

The new Schieren V Belt eliminates the need for a huge inventory of thousands of sizes and lengths heretofore required for replacement purposes. Supplied in rolls. Cut the length you need, and make your own V belts endless. The Schieren New Method also provides the means to do this job right on the pulley and save the hours always lost in shutdown periods.

MODERN DESIGN
SCHIEREN
ALL LEATHER V BELT
PATENT APPLIED FOR
Supplied in rolls. The three standard sizes A, B and C will meet your V belt requirements. Note flat leather side walls that provide the grip.

WRITE FOR THE COMPLETE DETAILS

CHAS. A. SCHIEREN COMPANY
31 FERRY STREET, NEW YORK, N. Y.
60 FRONT STREET, W., TORONTO, CAN.

SCHIEREN
DUXBAK BELTING
TRADE MARK

LEATHER BELTINGS • SPECIALTIES AND HYDRAULIC PACKINGS

CHICAGO - SALT LAKE CITY - LOWELL - DENVER - DALLAS
NEW YORK - PITTSBURGH - PHILADELPHIA - NEWARK

When writing Chas. A. Schieren Company please mention Purchasing

ARMORED in PLASTIC

THIS NEW ¼" PORTABLE ELECTRIC DRILL IS 14% LIGHTER . . . HAS MORE POWER PER POUND!

14 percent lighter in weight, more powerful per pound, cooler to handle, and far safer, the new Thor "Armored in Plastic" ¼ inch portable electric drill brings remarkable new speed and operating ease to every war production drilling job.

The "Armored in Plastic" construction of this Thor drill is unique, for the tough, new, specially developed "Thorite" plastic does not support any operating parts, but serves only as a protective armor. In fact, the drill will operate perfectly with the plastic armor entirely removed!

The new Thor "Armored in Plastic" drill is available *now* to war industries. For full information send the coupon.

Advantages of the Thor U14K That Speed Production and Assure Long Service Life

MORE POWER PER POUND—Over-capacity, high-torque Thor AC-DC motor provides heavy-duty drilling power in light weight tool for continuous production service.

14% LIGHTER WEIGHT—Housing of tough, light "Thorite" plastic; skeleton motor-and-gear-frame of strong, light aluminum permits compact, weight-saving design without sacrifice of motor size or power. Only 3¼ lbs., the heavy-duty Thor U14K is 14% lighter than comparably-rated, old-style machines.

NEW HANDLING COMFORT—Smooth contours and "natural-fit" grip make the U14K comfortable to handle for continuous working. Perfect balance and light weight permits "finger-point" drilling accuracy with easy, one-hand operation.

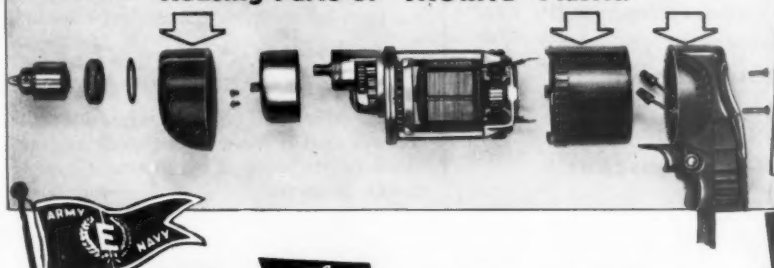
COOL-RUNNING—Oversize fan and ample intake and exhaust slots circulate generous volumes of air through tool to make it extremely cool running. Heat-resisting "Thorite" plastic housing stays cool in the hand.

GREATER SAFETY—"Thorite" plastic — a non-conductor — is added protection against shock. Three-conductor cable with ground wire and neoprene-sealed switch are other Underwriter Approved features

This Skeleton Frame is Secret Of Its Amazing Strength

This sturdy metal frame supports all internal operating parts of the Thor plastic drill, insuring close tolerance and permanent alignment of all parts. The plastic housing does *not* support any working parts, but serves only as a protective armor.

Housing Parts of "THORITE" Plastic:



ARMY E NAVY

THOR'S 50th YEAR

Thor *Portable Pneumatic and Electric Tools*

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO, ILL.

Branches in Principal Cities

ADDITIONAL INFORMATION

Independent Pneumatic Tool Co.
600 W. Jackson Blvd., Chicago, Ill.

Please send full engineering data on the new Thor "Plastic" Drill.

Name .....
Title .....
Company .....
Address .....
City ..... State .....

When writing Independent Pneumatic Tool Co. please mention Purchasing

AMPCO CASE HISTORIES

AMPCO METAL *Chosen by 60*
Leaders Because of Proven Quality

The aircraft industry — staffed by metallurgists and engineers with a keen perception of quality — uses Ampco Metal because experience has proved the ability of this alloy to outperform other bronzes. Over 60 aircraft and equipment manufacturers are Ampco customers. Most U. S. combat planes — bombers, fighters, interceptor-pursuit ships — are Ampco-equipped, evidence of the desirability of this bronze. Only the best materials go into combat planes which must perform their missions and get safely back.

The critical selection of materials and alloys by aircraft designers is engaging the attention of all industry. Perhaps you also have equipment parts subject to unusual stress and wear. The use of Ampco bronze undoubtedly can produce results that are a credit to you—enabling you to overcome metal fatigue, wear, and failure in these critical parts . . . Suggest the use of Ampco Metal to your key men. Write today for "File 41—Engineering Data Sheets."

AMPCO METAL, INC.
DEPARTMENT PA-5 MILWAUKEE, WISCONSIN

AMPCO METAL

THE METAL WITHOUT AN EQUAL

(Continued from page 196)

tools are milling cutters, twist drills, taps, reamers, broaches, and cemented carbide tipped tools.

"We must get across to the workers the fundamental idea that tools are war weapons and that they must be as well cared for as guns," Mr. Johnson said in conclusion. "If the novices learn to handle their tools with care and skill they will get approximately 10 per cent more use out of them and war production will be stepped up accordingly."

TO PUT OUT FIRES

Put out fires by applying an extinguishing agent to the fuel, declares Professor Arthur R. Davis of Massachusetts Institute of Technology. "Take care of the fuel and the flame will take care of itself" he said, for a fire goes out when the air is excluded and the combustible material is brought below kindling temperature. For excluding air from which the fire draws oxygen, Professor Davis suggests carbon dioxide, carbon tetrachloride, water in the form of fog or live steam, or just putting a cover over the blaze. To cool the combustible material, he recommends water or sand.

SIGNS HELP SEGREGATE SCRAP

The Westinghouse Appliance Division, Mansfield, Ohio, has developed a simple system to salvage clean, uncontaminated scrap. In addition to helping the war effort by keeping the scrap flowing back to the smelters in the best possible form, this method results in obtaining highest scrap prices, and makes it easier to obey the directive of the WPB against the contamination of certain alloys.

Throughout the plant there have been placed handy bins into which scrap is placed by workmen. Each bin is carefully marked by signs, which not only give the general name of the material, but also gives the alloy number, so that there can be no mistake. For instance, in one section three different types of aluminum alloy are used—17S, 3S and 2S. Each separate bin is so marked that there can be no mistake as to where scrap goes.

From the containers in which it is collected, the scrap goes to a baler. After baling the scrap is again stored in groups according to alloy number until enough has been collected for economical disposal.

"BATTLE STATIONS FOR ALL"

The Office of War Information announces that it has concentrated into one handbook the story of the Federal Government's program to control living costs and prevent inflation. The booklet, is "Battle Stations for All." Its theme is the seven-point set of principles enunciated nearly a year ago by President Roosevelt, namely:

(1) tax heavily and hold profits down; (2) fix ceilings on prices and rents; (3) stabilze wages; (4) stabilize farm prices; (5) save more, buy less; (6) ration all essential commodities that are scarce, and (7) discourage installment buying and encourage paying off debts.

STENCILS DO THE JOB BETTER ...FASTER

The address is the important part of your shipment. It conveys your product into the hands of the buyer. It must be legible for correct, speedy delivery to give customers the service they expect. Today, lost or delayed shipments may mean the difference between life and death. STENCIL MARKED shipments avoid unnecessary shipping errors. They deliver the goods.

MARSH STENCIL MACHINE

speedy character selection...

Marsh Stencil Machine has free-moving, distinctive dial and pointer for quick selection of characters. This feature, combined with finger-tip control, automatic guide and spacer, etc., makes it possible for an operator to increase his speed 10% to 15%. New streamlined construction embodies all safety features for protection of operator. Its sturdy construction provides durability without needless, excess weight. It is engineered to give maximum service. Marsh Machines meet Government specifications which specify three sizes... ½", ¾", and 1". Available for prompt delivery on priority. Your inquiries will be given all consideration. Write today. No obligation.

MARSH FOUNTAIN BRUSH, OIL BOARD, FELT TIP MARKER AND STENCIL INK

FOUNTAIN BRUSH: Marks 500 stencils without refill. Pays for itself in 3 days.

OIL BOARD: Thoroughly *oil-impregnated*... does not get brittle. Lubricates as it's punched.

FELT TIP MARKER: Marks even, clear, permanent. Clean and fast. Replaceable tips.

STENCIL INK: Clean, sharp markings. Goes farther... costs less... highest quality. 8 colors.

WRITE...WIRE...OR PHONE

MARSH

MARSH STENCIL MACHINE CO. 37 MARSH BLDG. BELLEVILLE, ILL.

PERSONALITIES in the NEWS

John F. Wood, City Purchasing Agent, Glens Falls., N. Y. since 1941, has resigned his position to become connected with the Hall Ice Cream Division of the Borden Company.

John B. Walsh has been appointed Assistant Purchasing Agent, State of Rhode Island, succeeding Edward J. Cayo who has become college business manager at Rhode Island State College. Mr. Cayo served as Assistant Purchasing Agent for four years.

Albert Hesse, Purchasing Agent of the Pacific Coast Borax Company, Los Angeles, Calif., is now a First Lieutenant, Procurement Division, United States Army. He is one of the pioneer members of the Los Angeles Purchasing Agents Association.

Mrs. Evelyn Albrecht has been appointed Purchasing Agent for the University of Idaho, Moscow, Idaho, replacing Winston Goss who has become affiliated with the

American Red Cross in Washington, D. C, Mrs. Albrecht, wife of Dr. Milton C. Albrecht, English instructor, was formerly Purchasing Agent, and personnel and research director for the H. C. Capwell Company of Oakland, large retail department store.

Jerry B. Lancaster, Guymon, Okla., has been appointed Purchasing Agent of the State Highway Department. Howard Davis was named Assistant Purchasing Agent.

Frederick H. Bosworth, buyer for the Standard Oil Company of Indiana, Chicago, has retired on company annuity, after 50 years of service. In honor of his

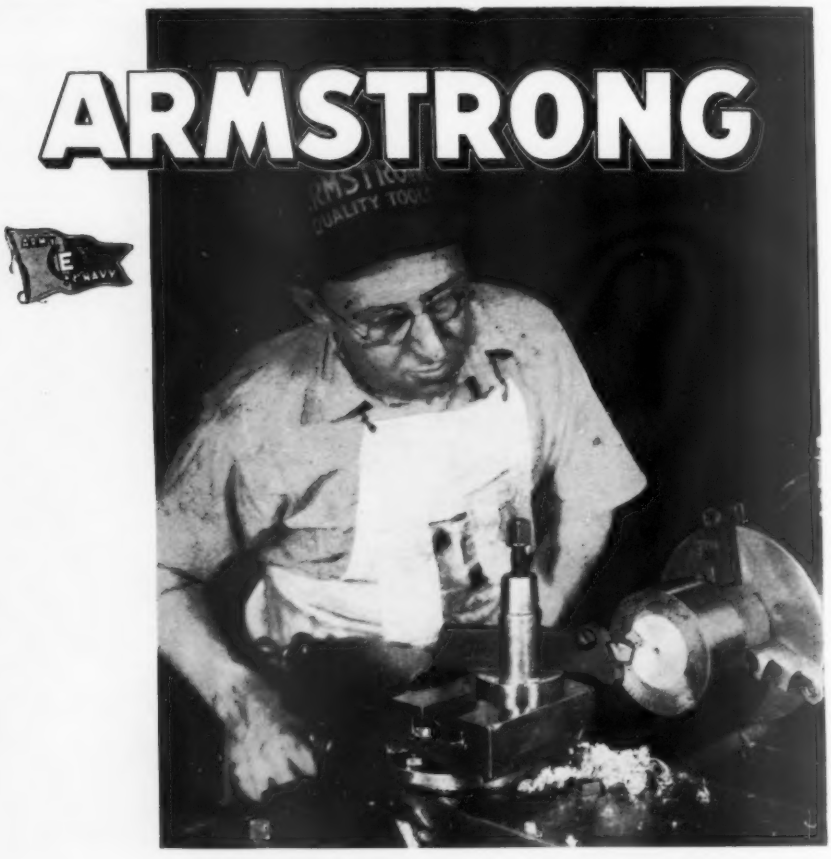
golden anniversary of service last December 18, he was awarded a gold watch by the board of directors. He started with Standard when 14 years old, filling ink wells and running errands for $3.50 a week. He was made buyer in 1923.

Clinton E. Farnham succeeds Wm. E. Ripley as Purchasing Agent of the Massachusetts General Hospital, Boston.

E. L. Warner has been appointed director of Purchases for Buhl Sons Co., wholesale hardware, distributors, Detroit, Mich., succeeding the late A. H. Nichols. He joined the Buhl Sons Company in

(Continued on page 202)

ARMSTRONG



***This WAR is being won with High Speed Steel in* ARMSTRONG TOOL HOLDERS**

Victory begins in the tool rooms and machine shops, for striking power first takes form in jigs, fixtures and dies . . . in more and more machine tools, each operating continuously at the highest possible speeds and feeds.

Since the capacity of any machine tool is limited to the efficiency and capacity of its cutting point, we can afford, today, only the strongest and most efficient cutting tools with the finest cutting edge. This means, for all general lathes, planers, slotters and shapers and for many screw machine and turret lathes, the correct ARMSTRONG TOOL HOLDER with a cutter bit of high speed steel.

With high speed steel so essential to top efficiency, so widely needed and with our national supply so difficult to maintain, to waste high speed steel in forged tools is to delay victory because the same high speed steel consumed on one forged tool would supply high speed steel cutters for 10 ARMSTRONG TOOL HOLDERS — would go 10 times as far, would do 10 operations instead of one, would machine 10 times as many dies or jigs. Use ARMSTRONG TOOL HOLDERS wherever possible to "Save: All Forging, 70% Grinding and 90% High Speed Steel." This war is being won right now in jigs and fixtures — with High Speed Steel in the ARMSTRONG TOOL HOLDERS used in over 96% of the machine shops and tool rooms.

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
303 N. FRANCISCO AVE., CHICAGO, U. S. A.
Eastern Warehouse and Sales:
199 Lafayette St., New York

Dust-Protected

FOR

UNINTERRUPTED SERVICE

The motor — Diesel or Gasoline — which has the *Dust Protection* of a Donaldson Oil-Washed-Air Cleaner gives far greater promise of uninterrupted Service. High in efficiency, this popular cleaner gives complete protection to either gasoline or Diesel engines. Donaldson Oil-Washed-Air Cleaners are built to fit the individual job. No matter how large or small your product, the engine exposed to dust demands Protection. Our engineers will be glad to work out the particular type best suited to your requirements. Write

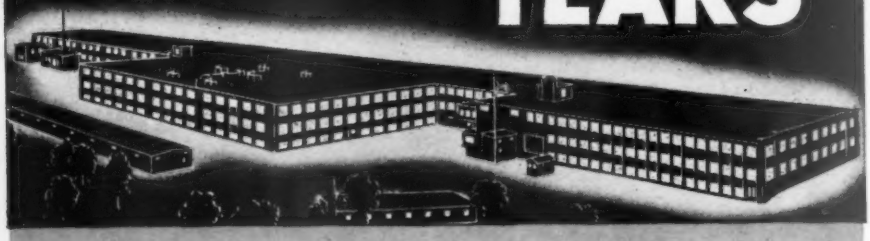
DONALDSON COMPANY, INC.

666 Pelham Avenue • St. Paul, Minnesota

DONALDSON
Oil Washed
AIR CLEANERS

When writing Donaldson Company, Inc. please mention Purchasing

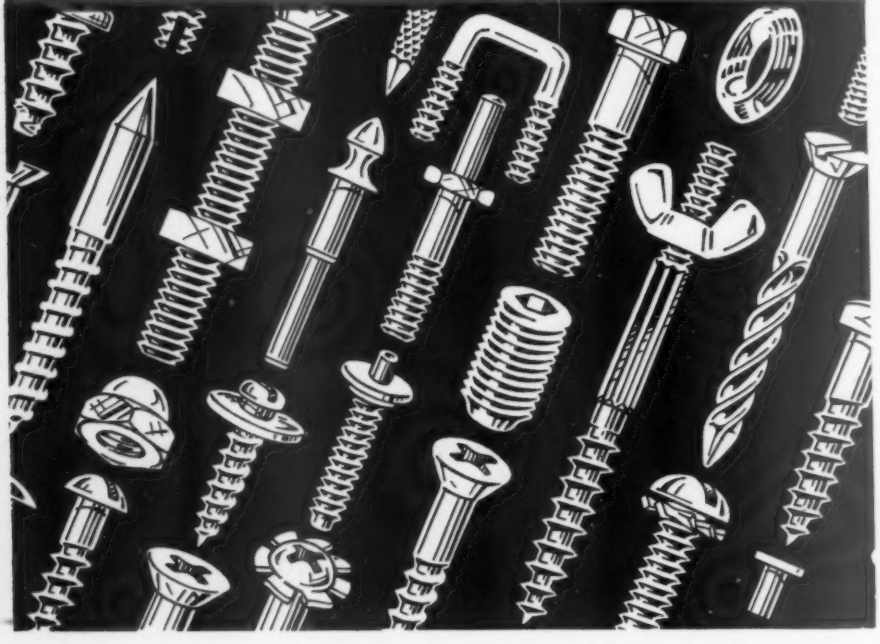
NIGHT and DAY for TWENTY-FIVE YEARS



War Production is 24 hour a day production, but 'round the clock operation here at Continental is not a war inspired innovation. For over a quarter of a century a three-shift work schedule has enabled this company to supply industry efficiently and economically with huge quantities of precision fastenings for every type of assembling. War requirements are met by the same orderly efficiency, augmented by greater production facilities.

Since 1904 Continental Screw Co., has continued to provide the finest fastenings science can devise.

CONTINENTAL SCREW CO. New Bedford, Mass., U.S.A.
BUY MORE WAR BONDS



(Continued from page 200)

1921, and prior to his present position was buyer and manager of the Builders' Hardware Department.

P. Joseph Sullivan of Providence, R. I., former State Purchasing Agent, has been appointed to an investigative position in the State Department of Labor. He will serve as an inspector of compliance with safety and health regulations, specializing on department stores and similar mercantile establishments.

Robert H. Letendre, City Purchasing Agent, Manchester, N. H., in a program gradually expanding his duties, announces that purchases will be made through his office by nine more departments, extending his procurement services to 23 departments. He expects to complete arrangements with the school, water and fire departments shortly.

D. Knowlton Read, Deputy County Purchasing Agent, Essex County, New Jersey, has been named by the Board of Freeholders as Coordinator of Rationing problems within county institutions. He will act as liaison officer between the board, the institutions, the rationing boards of the county and the offices of the OPA.

Earl L. Curtis was recently elected president of the American Crayon Company, Sandusky, Ohio. He joined the company in 1906 as office boy, becoming office manager, Purchasing Agent, and Vice President in Charge of Purchasing. He was made a member of the Board of directors in 1920. The cost system that the company is now using, was installed by Mr. Curtis in his early days.

Andrew H. Phelps, vice president in charge of Purchases and Traffic for the Westinghouse Electric and Manufacturing Co., who recently received the Westing-

house Order of Merit for exceptional service to the electrical industry and his company in wartime. Mr. Phelps was presented with the Order of Merit metal (April *Purchasing*), a silver W on a bronze background, by George H. Bucher, president of Westinghouse, during a ceremony held at the East Pittsburgh Works

(Continued on page 205)

You Name the Part —

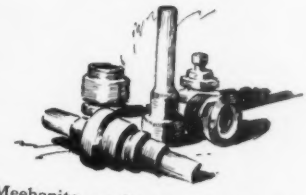
Probably we make it

Brake Shoe **MAKES PARTS FOR MANUFACTURERS . .** Parts in many kinds of metals and metal alloys, compositions and fabric . . . parts that are cast, upset, drop forged and molded. In war as in peace, Brake Shoe ships millions of parts to thousands of manufacturers, in many fields of industry.

The services of our research and development engineers are available for immediate or post-war problems.

AMERICAN BRAKE SHOE COMPANY, 230 PARK AVENUE, NEW YORK

PARTS FOR—MACHINERY

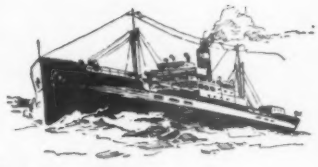


Meehanite castings, upset and drop forgings, bearings. Manganese steel gears, sheaves. Pressure castings.

PARTS FOR—EXCAVATING

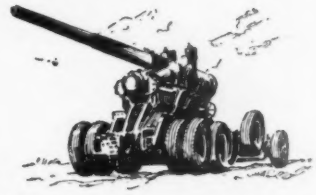
Placer dredge buckets, dredger and power shovel dippers. Quarrying, mining equipment parts. Bronze bearings.

PARTS FOR—SHIPS



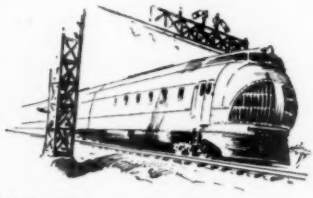
Brass and non-metallic bearings. ABK bearing wheels. Air compressors. Parts for all types of ships.

PARTS FOR—GUNS



Upset forgings, non-ferrous parts for naval and field guns. Liners, gear blanks, parts for gun assemblies.

PARTS FOR—TRAINS



Brake Shoes and Meehanite castings. Manganese steel center and wear plates. Journal bearings.

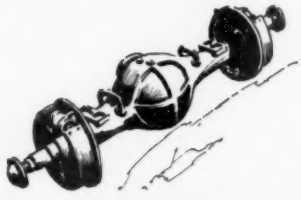
PARTS FOR—TANKS

Forged shafts, transmission parts, brake levers, drain valve cages, armor plate castings. Bronze bearings.

PARTS FOR—PLANES

Propeller hubs, machined parts for engines, retractable landing gears. Non-ferrous castings and forgings.

PARTS FOR—CARS AND TRUCKS



Automotive, industrial brake lining, axle, gear blank forgings, fan belts, clutch facings. Garage equipment.

AMERICAN

Brake Shoe

COMPANY

58 PLANTS SERVING INDUSTRY AND TRANSPORTATION

American Brakeblok Division ..... *Detroit, Mich.*	**Kellogg Division** ..... *Rochester, N. Y.*
Ramapo Ajax Division ..... *New York City*	**American Forge Division** ..... *Chicago, Ill.*
American Manganese Steel Division ... *Chicago Heights, Ill.*	**Southern Wheel Division** ..... *New York City*
Brake Shoe and Castings Division ..... *New York City*	**National Bearing Metals Corp.** ..... *St. Louis, Mo.*

When writing American Brake Shoe Company please mention Purchasing

Wherever There's WAR ACTIVITY There's a DISTRIBUTOR Serving It . . .

The distributor is rendering an indispensable service these days. With his complete familiarity with requirements and sources of supply, he is helping hard-pressed procurement offices to obtain vitally needed equipment and supplies for the Army, Navy, Maritime Commission and Air Force...not to mention his services to the thousand-and-one other industries engaged in war work.

He's alive to the needs of the times and his wide experience qualifies him as the logical force to ferret out those needs...he's here, there and everywhere—any hour of the day or night. He knows that he justifies his existence only in the measure that he renders service. Once he receives an order, he is, by the very nature of his business, the best expediter in the world, because his organization is *trained* to get things through in the shortest possible time.

Long ago, Lunkenheimer recognized the distributor as the most efficient and economical means of marketing its products and built up nation-wide distribution through leading supply houses. We salute these distributors for the outstanding job they are doing in helping to speed up war production.

Ask for Catalog 78.

ESTABLISHED 1862

NEW YORK BOSTON

THE LUNKENHEIMER CO.

"QUALITY"

CHICAGO PHILADELPHIA

CINCINNATI, OHIO, U. S. A.

EXPORT DEPT., 318-322 HUDSON ST., NEW YORK

BRONZE, IRON, STEEL AND CORROSION RESISTANT ALLOY VALVES, 125 TO 2500 LB. S.P.; BOILER MOUNTINGS, LUBRICATING DEVICES, AIRCRAFT FITTINGS

When writing The Lunkenheimer Co. please mention Purchasing

(Continued from page 202)

with 250 company officials and employes present. Mr. Phelps joined Westinghouse in 1937 coming from the McGraw-Hill Publishing Company where he served as sales manager and public relations director for seven years.

Alden Horton has been placed in charge of Purchasing and Procurement for Schick Incorporated, Stamford, Conn. For the past 20 years, Mr. Horton has been Purchasing Agent for the Hardinge

Co. and its subsidiary the Steacy-Schmidt Manufacturing Co. of York, Pa. He has been a prominent member and director of the Purchasing Agents' Association of Philadelphia, and also served two terms as a director of the National Association of Purchasing Agents. In civic affairs he is a past president and past district governor of the York Exchange Club and is also a member of the Lafayette Club and the Country Club of York.

David L. Richardson, who for the past 14 years has headed the consulting department of Scudder, Stevels & Clark, New York, has been admitted to general partnership in the firm. Before joining the investment counsel firm he was Purchasing Agent successively with the Lord Electric Co. and the McCall Corporation.

Glen A. Lloyd, head of the price adjustment section of the Chicago Ordnance District has been appointed Assistant Director for Price in the Purchase Division of the War Department, Washington, where he will be in charge of pricing activities and cost analysis.

E. Howard Manuel has been appointed Purchasing Agent for the Bellevue Stratford Hotel, Philadelphia, Pa., his responsibilities including food, beverage and household goods. He was formerly Purchasing Agent for the Benjamin Franklin Hotel, and also for the Carlton Hotel at Washington.

John Kleder has been promoted to Director of Purchases and manager of the War Contract Division of United Wall Paper Factories, Inc., Chicago. He is a member of the Board of Governors of

(Continued on page 206)

THE SOURCE TO CHECK

Shown above are only a few in the wide range of communication and low voltage electrical parts Kellogg is manufacturing to specifications for industry. If your requirements call for these or allied parts, let us show you how our facilities can help speed your work.

Kellogg's experience in designing and manufacturing rugged, precision communication and industrial electrical equipment extends over 46 years. During that time, numerous industries in widely varying fields, have come to associate the Kellogg name with the finest in engineering and production practices.

Whatever your need of the moment ... whether it's for parts or products to use in your plant operations, or to incorporate into the products you make ... your problems will have immediate attention here. For full information, write to the Kellogg Industrial Sales Dept.

KELLOGG SWITCHBOARD & SUPPLY CO.
6622 S. Cicero Avenue, Chicago, Illinois

KELLOGG

Manufacturers, Engineers and Designers of Quality Communication and Industrial Electrical Equipment

When writing Kellogg Switchboard & Supply Co. please mention Purchasing

Talk about "Killing Two Birds with One Stone!"

Two SUPPLY RESTRICTION PROBLEMS* Solved At ONE Source!

PROMPT DELIVERIES!

Restricted production (shortage) of Dry Cells
★ *Use IDEAL Rechargeable Storage Batteries*

★ Restriction of Solder, Copper or Copper Alloys for Making Electric Wire Connectors.

Use IDEAL "Wire-Nuts"
The Solderless, Tapeless Wire Connectors

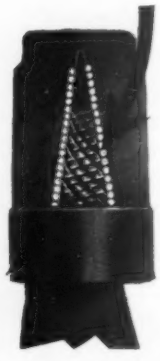
IDEAL
Rechargeable Storage Batteries for Flashlights

Can be recharged over and over again, like the storage battery in your automobile. Simple charger plugs into any light socket. One IDEAL Rechargeable Storage Battery can eliminate the purchase of 400 or more dry cells. (Conserves about 68 lbs. of carbon, zinc and other vital materials.) Provides bright, steady light at all times. User always has "fresh" battery, simply by recharging. IDEAL Flashlight Storage Battery same size as two 1¼" D dry cells; fits standard flashlight case.

IDEAL
"Wire-Nuts"

Solderless, Tapeless — for wire connectors

An alternate and improvement for solder-and-tape electric wire connections for use on production lines, and for plant electrical wiring. "Wire-Nuts" meet all government requirements. SAVE CRITICAL MATERIALS. Use No Lead, Copper or Copper Alloys — no Tin or Rubber as required for solder-and-tape joints. Fully Approved; Listed by Underwriters' Laboratories, Inc. All sizes for connecting wire ends from two No. 18 to three No. 10. Can be re-used when changes are made in wiring.



PROMPT DELIVERIES

Full Information on sizes, prices and applications, on telegram or letter request.

IDEAL COMMUTATOR DRESSER CO.
4136 PARK AVENUE ★ SYCAMORE, ILLINOIS
Sales Offices In All Principal Cities

(Continued from page 205)

the Purchasing Agents Association of Chicago, and has served on many of its committees. He has been Purchasing Agent for the wall paper company for many years. His assistant, John W. Mazouch, succeeds him as Purchasing Agent.

Howard Rebensall has been appointed City Purchasing Agent, Toledo, Ohio, succeeding Ward Waltz, who filled the position for the past six years. Mr. Waltz has joined the Hardy & Dischinger Company.

Frank J. Coughlin has been appointed Purchasing Agent for Pratt & Whitney, Division Niles-Bement-Pond Company,

West Hartford, Conn., succeeding Howard H. Wallace who was forced to relinquish the position because of ill health. Mr. Coughlin has been Assistant Purchasing Agent since 1928, and November 13 of this year will have completed 30 years' of continuous service with the company.

Louis H. Schreiber, Purchasing Agent, Wrisley Company, Chicago, has been commissioned a lieutenant in the U. S. Naval Reserve Corps. He is now stationed at Kodiak, Alaska, as assistant to the U. S. Navy Supply Officer.

Joseph M. Levene, Deputy Director of Purchases and Supplies for the Department of Education, Binghamton, N. Y., recently received probationary appointment as Director.

William Milliken, Purchasing Agent, county sanatorium, Middleton, Mass., was recently appointed maintenance supervisor of the institution by the county commissioners.

C. Glenn Horne, Purchasing Agent for Lykes Bros. Steamship Company, has been transferred from Houston, Tex., to the company's headquarters at New Orleans.

Lieut. Gordon P. Bier, formerly buyer, Purchasing Department, Illinois Central R.R., has been promoted from Acting Purchasing Officer at Great Lakes Naval Training Station to Purchasing Officer,

(Continued on page 208)

Those Supplies You're Thinking About *Today*

Your I. S. D.* may have ordered on high priority *Last Month!*

Your Purchasing Department may be short-handed. Your Expeditors may be run ragged. But your *Industrial Supply Distributor is on the job—capable as ever, ready to help. *Are you using him enough?*

He knows what you need—the whole range from grommets to forge hammers. He knows where he can get them—he has many sources of supply. He buys more often than not on high priority. He orders in big lots—as often as he can, and as much as he can get. He buys for stock—in normal times he carries as many as 25,000 to 50,000 individual items.

It will pay you always to inquire of your Industrial Supply Distributor before you send directly to the factory—he may have anticipated you by ordering last month or the month before the very things you need tomorrow. Thus you avoid duplication, confusion, scattered effort. Telephone your Distributor FIRST! And save yourself both time and expense.

Your Distributor is your dependable supplier of Cle-Forge High Speed Drills, Peerless High Speed Reamers, and other cutting tools that we manufacture.

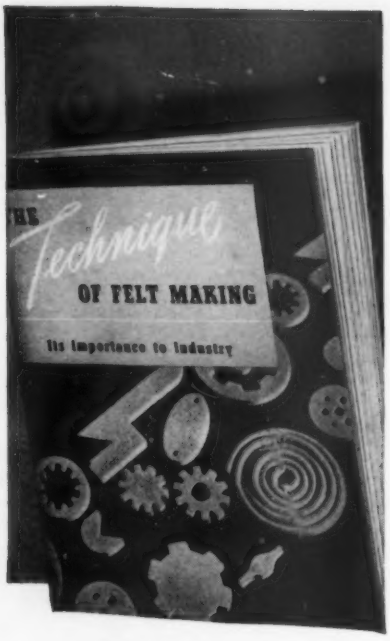
TRADE MARK REG. U.S. PAT. OFF.

The CLEVELAND TWIST DRILL COMPANY
1242 EAST 49TH STREET
CLEVELAND

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

30 READE ST. NEW YORK 9 NORTH JEFFERSON ST. CHICAGO 650 HOWARD ST. SAN FRANCISCO
6515 SECOND BLVD. DETROIT LONDON - E. P. BARRUS, LTD. - 35-36-37 UPPER THAMES ST., E.C.4

When writing The Cleveland Twist Drill Company please mention Purchasing



Doing the Impossible?

Booth "prescription" felt...precision-cut into mechanical parts... is being used successfully in "unbelievable" applications.

Modern technology produces felts that must be reckoned with, when engineers choose their industrial materials. An impressive range in felt hardnesses, textures, and properties such as resiliency, oil-absorption, abrasion-resistance . . .

Get a copy of Booth's abridged textbook, "The Technique of Felt Making." It will give you a new conception of the industrial importance of felt. May offer a quick solution to your own materials problem.

THE BOOTH FELT COMPANY
485 19th Street, Brooklyn, N.Y.
749 Sherman Street, Chicago, Illinois

COMBINATION APPLICATION CHART AND SAMPLE FILE

...yours for the asking. Standard file size. Contains actual swatches of S.A.E. felt types, with complete specification tables. No obligation . . . no sales follow-up.

1908

(Continued from page 206)

U. S. Naval Air Station, Detroit, Michigan. He was granted leave of absence from the I. C. in 1942.

Mims W. Hutchins, state Purchasing Agent for Alabama, has been appointed to the newly created position of Manager of Purchases and Stores of the DeBardeleben Coal Corporation, Ala. C. E. Hargrove will be his principal assistant.

Thomas H. McGarry, Purchasing Agent of the Eastern Massachusetts Street Railway, with headquarters at Boston, Mass., has been made vice president in charge of Purchasing and Stores. He has been Purchasing Agent since 1924.

Ivan B. Nevill, past president of the Houston Association of Purchasing Agents, has been appointed assistant to the superintendent of Oil City Brass Works, Beaumont, Tex. He was previously buyer for Arthur G. McKee & Co., Houston.

Edward J. Fitzgerald, formerly connected with the Purchasing Department of Remington Arms, Inc., Lowell, Mass., is now connected with the Office of Procurement and Material, Navy Department, Washington, D. C.

Charles L. Sheldon, Purchasing Agent, Hood Rubber Co., and past president of the New England Purchasing Agents Assn., has resigned as Director of the Containers Division, WPB, Washington.

Heber O. Wolfe has been promoted to Purchasing Agent of the Chicago & Alton R. R., with headquarters in Chicago.

✓ ✓ ✓

NO ADDITIONAL AUTO TAX

Report from Washington states that members of House Ways and Means Committee deny that they are considering an increase in $5.00 Federal motor vehicle use tax. Representative Van Zant, Pa., Republican, is urging repeal of tax, charging that it has served no useful purpose but is in reality acting as a deterrent in collecting gasoline and other taxes. He declares that with the reduction in revenue from gasoline and other excise taxes incident to the restricted use of motor vehicles the states and Federal government are faced with a huge loss of tax revenue.

✓ ✓ ✓

NAMM NAMED BRAZIL PURCHASING DIRECTOR

Major Benjamin H. Namm, formerly president of the Namm Department Stores, Brooklyn, N. Y., has been appointed by the Board of Economic Warfare as director of the United States Purchasing Commission in Brazil. Major Namm, who until his appointment was special assistant to the director of the Office of Civilian Defense, will succeed

(Continued on page 211)

FULLER FLOOR BRUSHES
For Institutional Sweeping

FLOOR BRUSHES
SCRUB BRUSHES
DUST BRUSHES
WET MOPS
DRY DUSTING MOPS
FIBER BROOMS
WAX & POLISH
Send for Catalog

In Sizes and Weights for Every Need

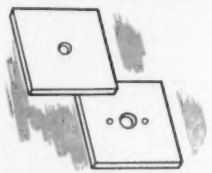
The FULLER BRUSH Company
Industrial Division
3585 MAIN STREET - HARTFORD, CONN.

QUICK-OPENING LOCK...

EASY TO INSTALL...EASY TO OPERATE!

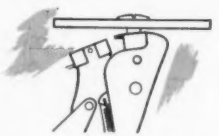
SHAKEPROOF
COWL FASTENERS

Perfect for fastening covers, doors, panels and other removable parts. Speeds Assembly...Assures Fast Servicing!

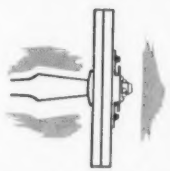


Holes are drilled in the sheets to be fastened. Countersunk holes are used for flush type assembly.

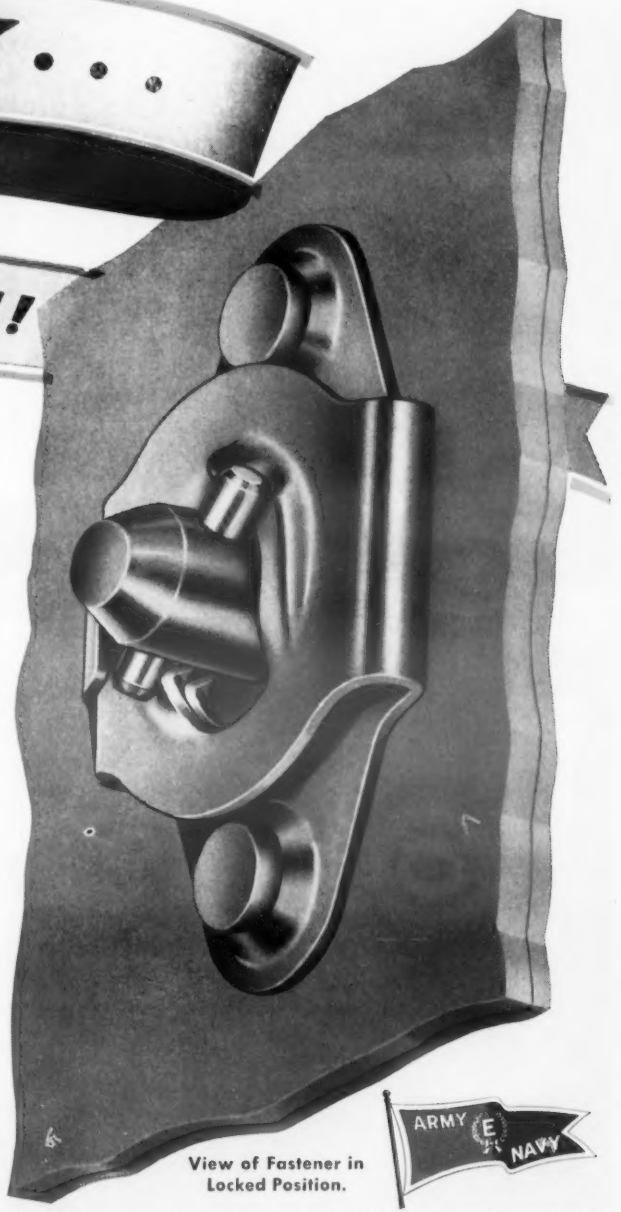
The spring unit is attached to the inner sheet with rivets or with Shakeproof Thread-Cutting Screws.



Stud is put through hole in outer sheet and cross pin is inserted with special pliers (the only special tool required).



Sheets are easily locked together by putting stud through spring unit and turning about a quarter turn with screw driver or coin.



View of Fastener in Locked Position.

ARMY E NAVY

SHAKEPROOF inc.

DISTRIBUTOR OF SHAKEPROOF PRODUCTS MANUFACTURED BY ILLINOIS TOOL WORKS

2501 North Keeler Avenue, Chicago, Illinois

Plants at Chicago and Elgin, Illinois • In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario

Insure YOUR PRODUCT *Against Rust* with EVERLASTING FASTENINGS *by* HARPER

YOU CAN insure your product against the ravages of rust and corrosion by using Everlasting Fastenings by Harper. The word, "Everlasting" refers to the alloys —brass, bronze, copper, Everdur, Monel and stainless steel. "Fastenings" refers to bolts, nuts, screws, washers, rivets and related "specials." For all practical purposes, they last forever.

Although the first cost of Everlasting Fastenings may be slightly more than the price of common steel or iron fastenings, the total cost is far less. Harper's Fastenings save hours and hours of time and labor required to replace rusted common steel bolts, they prevent failures of vital equipment and they keep production rolling regularly. They are not affected by ocean salt, tropic sweat, certain acids and alkalies and other tough conditions.

The H. M. Harper Company is the leading organization in America concentrating exclusively on fastenings made of the non-ferrous and stainless alloys.

4320 STOCK ITEMS

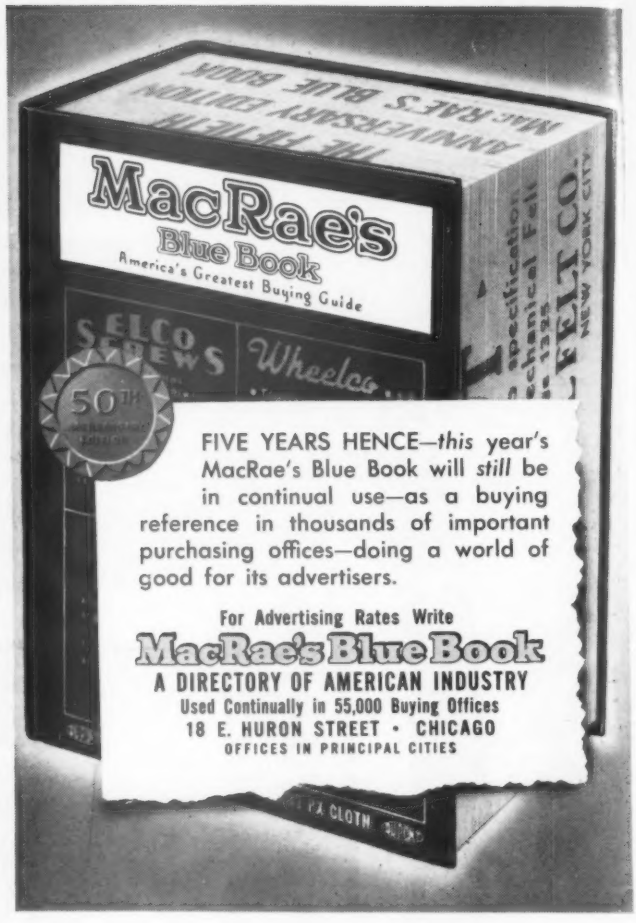
. . . of bolts, nuts, screws, washers, rivets and accessories in the non-ferrous and stainless alloys.

WRITE FOR CATALOG

. . . and reference book—80 pages—4 colors — 193 illustrations — numerous tables and other data. Free when requested on a company letterhead.

THE H. M. HARPER COMPANY
2606 FLETCHER STREET, CHICAGO
Eastern Branch:
45 WEST BROADWAY, NEW YORK CITY
Offices in Principal Cities

HARPER *Chicago*
EVERLASTING FASTENINGS
BRASS ★ BRONZE ★ COPPER
EVERDUR ★ MONEL ★ STAINLESS



FIVE YEARS HENCE—*this* year's MacRae's Blue Book will *still* be in continual use—as a buying reference in thousands of important purchasing offices—doing a world of good for its advertisers.

For Advertising Rates Write
MacRae's Blue Book
A DIRECTORY OF AMERICAN INDUSTRY
Used Continually in 55,000 Buying Offices
18 E. HURON STREET • CHICAGO
OFFICES IN PRINCIPAL CITIES

Who is the man who ate this dinner?

Clue #1 — *He's a very satisfied gentleman.*

Clue #2—*He's been here for two or three days calling on his Baltimore and Washington customers.*

Clue #3—*He does this often because The Lord Baltimore Hotel is perfect as business headquarters in the Baltimore-Washington territory.*

Who is he? He could be you!

Nearly 50 trains daily between Baltimore and Washington—two great centers of war activity.

For better accommodations — wire your reservation in advance.

The LORD BALTIMORE HOTEL
BALTIMORE • MARYLAND
700 rooms—each with radio, tub and shower

(Continued from page 208)

Maurice Cashan, who resigned two months two months ago.

As the new director of the U. S. P. C. in Brazil, Major Namm will be responsible for the United States development and procurement programs in that region, and will act under the general direction of Dr. Herman B. Baruch, special representative of BEW.

During the World War Major Namm served abroad in the Corp of Engineers as Chief gas officer, 5th division, A.E.F.

FIRST "JEEP" SYNTHETIC TIRE

Completion of the first synthetic rubber tire to be made entirely of government-produced materials was recently announced by the Goodyear Tire & Rubber Company, Akron, Ohio.

The historic tire was in sizes for U. S. Army "jeeps". Its only difference

from a conventional natural or synthetic rubber tire is the date moulded into both sidewalls.

Synthetic rubber for the tire was manufactured in a government-owned Goodyear operated synthetic rubber plant in Akron which was placed in operation last May and which has a higher production total than any other synthetic rubber plant in the country.

Styrene for the rubber was in the first carload to leave a government-owned plant in Texas City, Texas, which, in turn, was the first government styrene plant to go into production. This plant is being operated for the government by the Monsanto Chemical Company.

Butadiene for the rubber was from the first carload to leave the government-erected butadiene plant in Institute, West Virginia, likewise the first government butadiene plant to go into production anywhere in the country. This plant is being operated for the government by the Carbide and Carbon Chemical Company.

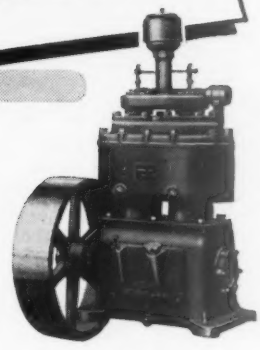
SUSPENSION ORDERS FEW

The number of Suspension Orders issued to date is surprisingly small in relation to the thousands of companies surveyed for compliance with War Production Board priority and regulations, W. John Logan, Director of the Compliance Division, reports.

Close to 75,000 investigations of all types have been made which resulted in 247 Suspension Orders and 59 criminal

(Continued on page 213)

How to Extend the Life of Your CURTIS AIR COMPRESSORS



• It will pay you to follow these suggestions on proper servicing of your Curtis Compressor. While long life is an inherent quality of every Curtis product, a little extra maintenance care now will extend its years of usefulness to help carry through today's critical times.

INSTALLATION . . . Be sure your compressor is in a clean, dry location in a level position; mounted solidly on a concrete foundation or bolted to an iron base. If motor driven, see that compressor and motor operate at recommended speed, in proper direction, and that motor specifications agree with current available.

LUBRICATION . . . Maintain proper oil level—check daily—oil only through oil filler cap—follow manufacturer's instructions. Use light grade auto cylinder oil. Drain and refill every three months. Keep oil off of belts.

COOLING WATER . . . Circulate a continuous supply of cooling water through jackets—either by connection to water lines or with water circulating pump. Under full load, cooling water should not exceed 125° F. When pump is used, keep pump suction always flooded.

SERVICING . . . Drain moisture from air tank at least weekly, preferably every day. When replacing head gasket, secure proper grade of material from manufacturer—do not use paper or soft rubber. Keep compressor clean.

TESTING . . . If air supply or pressure decreases, test all outlets, joints, and valves for leaks—using soapy water and brush. Periodically inspect check valves, safety valves, and valves in head of compressor. If they leak, remove and clean—oil them so as to work freely. Keep flywheel tight on shaft with nut and lock washer.

GENERAL . . . Discharge piping should be full size of compressor opening, as short as possible, with minimum number of bends. Don't use steam or water check valves; use dash pot or disc type. We recommend "V" belt drives with take-up provision. Consult instruction book when making repairs or replacements — when ordering parts or repairs, give serial number on nameplate.

By following these few service suggestions, you'll aid your Curtis Air Compressor to operate at peak performance throughout an unusually long, trouble-free life.

CURTIS

Curtis Pneumatic Machinery Division
of Curtis Manufacturing Company
1908 Kienlen Avenue St. Louis, Missouri

When writing Curtis Pneumatic Machinery Division please mention Purchasing

NEVER AGAIN!

Plan shows how G-E Rectifiers were "spotted" at strategic locations for recharging electric truck batteries to save time and labor usually wasted in returning them to a central charging station.

Never again will this plant have to "ship" electric trucks to a central charging station after a hard day's work or long hauls. By simply "spotting" G-E battery-charging rectifiers at strategic locations the trucks are recharged *on the spot*. Now they're always on the job, with no "time-outs." The rectifiers are fully automatic so all that has to be done is plug in the connection and turn on the switch. And the savings in labor and operating time will more than pay for the low cost of the rectifiers.

Why not let us send you detailed data on G-E Copper Oxide Rectifiers for charging electric truck batteries? Write to Section A532-77, Appliance and Merchandise Dept., General Electric Company, Bridgeport, Conn.

GENERAL ELECTRIC

When writing General Electric Company please mention Purchasing

(Continued from page 211)

prosecutions. In only one criminal case was a prison sentence imposed. A considerable number of the total cases revealed violations of a technical nature which had not impeded the war effort.

Supplementing these statistics, Mr. Logan said that letters from all over the country show a general willingness to comply with WPB orders. Irritation has abated while indignation increases against violators.

STEEL FOR LIMITED QUANTITIES OF CIVILIAN PRODUCTS

Many products that civilians have had to do without or have found hard to buy will again be available in limited quantities as the result of a WPB order releasing from inventories about 3,000 tons of wholly or partially fabricated steel parts for use in about 20 items for which they were originally intended. The products in which steel material, already processed by the dates (all are 1942) shown for each, may be used, are as follows:

Luggage (for sale to Post Exchanges and Ship Stores only)—August 14; millinery wire and gimps—June 18; beds (except spring frames)—June 18; cold and warm air registers—June 18; awning frames—June 18; hair clamps (barretts, decorative clips and fasteners)—December 5; frames for bags, purses and pocketbooks—June 18; linoleum binding—December 5; brushes and brush-backs—August 14; buckles for shoes, clothing and pocketbooks—August 14; buttons for clothing—August 14; clothing trim and dress ornaments—August 14; culverts—June 18; non-electric hair curlers—June 18; floor and counter covering trim—June 18; hat frames—June 18; mechanical book binding—June 18; screen frames—June 18 (WPB-3090).

Letter and numbers in parenthesis above identify official releases. The releases may be obtained from the U. S. Information Center, 1400 Pennsylvania Avenue, N. W., Washington, D. C.

HEALTH HAZARDS IN INDUSTRY

Thorough dust control and complete exhausting are recommended for combatting worker poisoning by fumes released by metals used in industry, by J. William Fehnel, industrial hygiene laboratory chemist of the Metropolitan Insurance Co. He declared that metal fumes, with lead heading the list, rank next to silica in the prevalence of health hazards in industry. With metal fabrication and welding supplanting riveting, there is an increase in exposure to metal fumes and other harmful gases. Handling of lead in a molten state is said to present a definite health hazard, safe concentration for exposure being only .15 miligrams per cubic meter of air. Hazards also attend the working with arsenic and antimony. Research is being conducted to ascertain the possibilities of danger with magnesium, selenium, chromium, cadmium and other metals.

This motor got on the job

A.M. PICK-UP

"Rush new motor Air Express" was the order a supplier received at 9 A.M. Ready for pickup at 10, it was taken to the airport, flown hundreds of miles to destination . . . and installed on a vital war job that same afternoon.

This motor was delayed

P.M. PICK-UP

Shipments ready for morning pickup but held for "late afternoon" routine, may be subject to delay. Heavy, peak-hour traffic may keep them grounded until a midnight or early morning plane.

For FASTEST delivery-Air Express!

To move emergency parts and critical material at 3-mile-a-minute speed, Air Express is on the job around the clock—not only on the home front, but working hand in hand with Army and Navy Air Transport services to supply our fighting fronts throughout the world.

You can help us give you the most efficient service in two important ways: SHIP EARLY—as soon as shipment is ready—to assure *fastest* delivery. PACK COMPACTLY—to conserve valuable space. Get our handy "Shipping Estimator" for finding costs and transit time. Write Dept. PR, Railway Express Agency, 230 Park Avenue, New York City.

AIR EXPRESS

AIR EXPRESS

Gets there FIRST

Phone RAILWAY EXPRESS AGENCY, AIR EXPRESS DIVISION

Representing the AIRLINES of the United States

Six Months versus Twenty Years Service *from Manganese Steel Chain*

This performance report from the tall timber savors so much of a Paul Bunyan tale that we would hesitate to release it if we did not have the evidence in our files.

Back in 1921 the superintendent of a California saw mill consulted our Oakland plant (one of Amsco's six foundries) regarding a chain used as a "hog-fuel" or refuse conveyor. The 1″x1⅝″x6″ forged coil chains used for this purpose had been giving only six months service. The superintendent naturally regarded the recurring replacement costs as excessive, and he wanted to know what could be done about it.

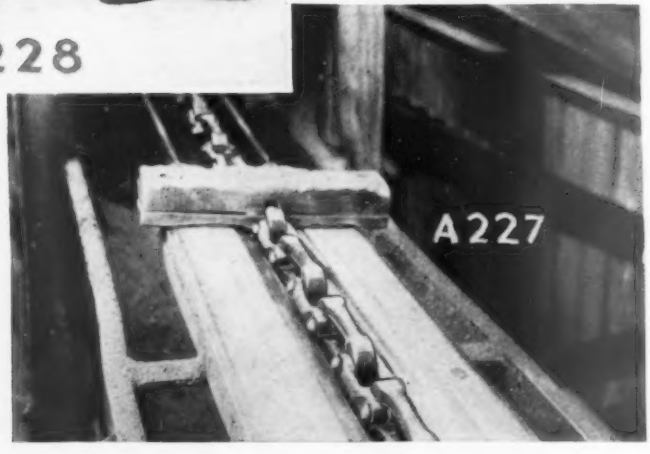
One of the engineers at our Oakland foundry worked out the riveted cast center-link and sidebar design shown in picture A-228, with the same general dimensions as the forged coil chain. The manganese steel chain shown in View A-227 was installed at the saw mill where it has been in service for over twenty years, latterly in log-haul-up duty. How much longer it will last is more than we would venture to predict.

The chain design as much as the durability of "the toughest steel known" figures in the twenty year record, having provided a much larger bearing area than that of the chain which it replaced. This, added to the tough stress resistance and the work-hardening property of austenitic manganese steel, accounts for the phenomenal performance.

The type of chain is now being used throughout the Pacific Coast area, for refuse conveying, log hauls and deck conveyors. Its durability is of particular value right now when conservation of metals is of extreme importance.

Amsco engineers are always prepared to make recommendations where equipment parts are not giving the performance that can reasonably be expected.

Amsco elevating and conveying chains are made in many types. Send for Bulletin No. 742-CN.



Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

THE AMERICAN
Brake Shoe
AND FOUNDRY COMPANY

NEW OFFICERS A. S. T. E.

New officers of the American Society of Tool Engineers announced at the eleventh annual meeting of the society held in Milwaukee, are as follows: President, Ray H. Morris, vice president, Hardinge Bros.

Ray H. Morris, President, A.S.T.E.

Inc., Hartford, Conn.; First Vice President, Douglas D. Burnside, superintendent American Stove Co., St. Louis; Second Vice President, C. W. Briner, assistant to president, Pipe Machinery Co., Cleveland. National secretary for the coming year is Earl Johnson, Firth Sterling Steel

Douglas D. Burnside, 1st Vice President, and C. W. Briner, 2nd Vice President, A.S.T.E.

Co., McKeesport, Pa.; and Floyd W. Eaton of the War Manpower Commission in Detroit was named treasurer. Adrian L. Potter was re-elected executive secretary.

The convention registration exceeded 5,000, and the attendance at the War Production Edition of the Machine and Tool Progress Exhibition is estimated as being in excess of 20,000.

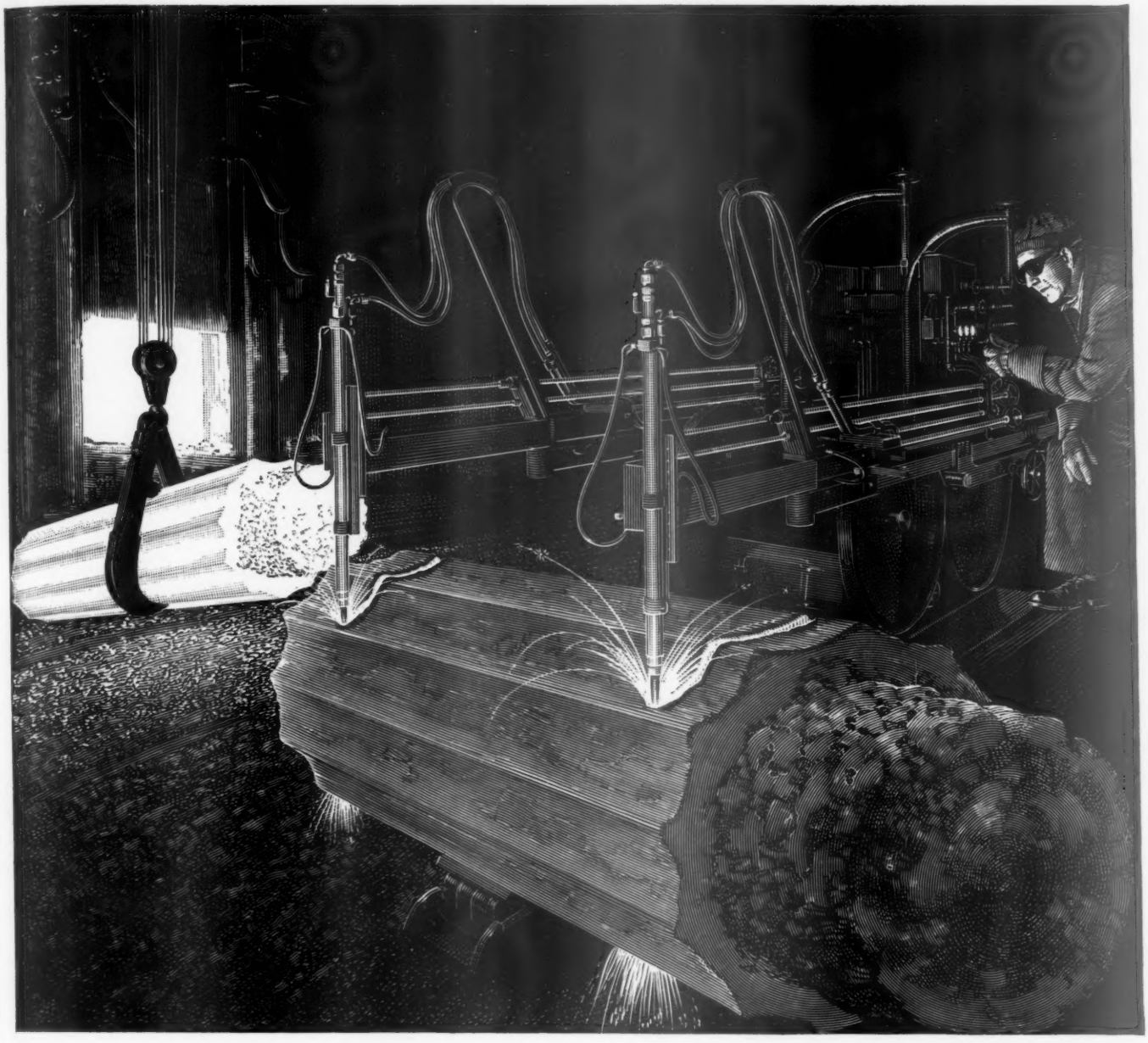
Most surprising factor revealed at the Exhibition were the vast number of new processes and new machines which have been developed during recent months. It is felt that many of the new developments undertaken by equipment producers with an eye to post-war markets, are being released at this time to help speed war production.

SAVES COPPER BY THE MILE

A reduction of 85% in the amount of copper used in systems to control outdoor and obstruction lighting, and other electrical apparatus at three military bases in North Carolina, Virginia, and New Jersey, is made possible by the use of carrier-current equipment, according to General Electric engineers.

Developed in the G-E Carrier-current Laboratory prior to the present war, the

(Continued on page 216)



A quick trim for a metal giant

TODAY, by means of a new heavy cutting technique developed by Airco research engineers, it is possible to crop ingots as thick as 36" with the oxyacetylene flame. Both ends of the ingot are sliced off simultaneously in approximately 11 minutes—compared to hours required by former methods. Moreover, ingots need be pre-heated only to about 900°, instead of to the much higher temperatures necessary with mechanical presses.

This speedier cutting is accomplished with a new Ingot Cutting Machine, designed and built by Airco engineers especially for this job. The machine controls the movement of the oxyacetylene cutting torches in an arc corresponding to the contour of the ingot. Ingots of any diameter within the cutting range of the machine may be handled simply by changing the setting of the torch guide bar.

If you work with metals, Air Reduction engineers will be glad to bring you up to date on many recent oxyacetylene flame and electric arc developments. They can assist you in the application of these processes to speed production, save materials and cost. Write your nearest Air Reduction office for full details.

AIR REDUCTION

General Offices:

60 EAST 42nd STREET, NEW YORK, N.Y.

In Texas:

Magnolia-Airco Gas Products Co.
General Offices: HOUSTON, TEXAS

IDLE CYLINDERS ARE PRODUCTION SLACKERS: KEEP 'EM ROLLING FOR VICTORY!

When writing Air Reduction please mention Purchasing

GIVE
Materials Handling
A LIFT
with Bond Universal Lift Jacks

WITH Bond Universal Lift Jacks, your present materials handling force can move loads faster . . . more safely . . . at lower cost. The Bond Universal handles light or heavy loads . . . is adapted to factory, terminal, loading dock, warehouse, store or elevator . . . operates smoothly on broad floors or narrow aisles.

This improved Lift Jack couples and uncouples swiftly . . . turns quickly. Handle is adjustable to suit any operator's height . . . can be operated in vertical position permitting easy storage in cramped quarters . . . can't drop and hit the floor. No springs . . . no pedals . . . no gadgets of any kind. It's simple . . . trouble-proof.

Install the Bond Materials Handling System—it's the modern, efficient, cost-cutting method. Learn how easy it is to begin. Write today for free bulletin R-37.

BOND FOUNDRY AND MACHINE COMPANY
MANHEIM, PA.
Manufacturers of Bond *Built-for-the-Job* Industrial Truck Casters and Bond Power Transmission Equipment.

Bond UNIVERSAL LIFT JACKS

(Continued from page 214)

carrier-current equipment used at the military bases is similar to that used by many electric power stations to control street lights and water heaters.

The equipment transmits impulses over the regular power lines at the miltary bases. These impulses are picked up by receivers which in turn operate relays to turn on or off the current flowing to electric lights, pumps, and other electrical apparatus. Use of this equipment at the military bases eliminated the necessity of running many miles of separate lines of copper cable to control the various electrical circuits.

90,000 TON SYNTHETIC RUBBER PLANT PUT IN OPERATION

The first unit of a 90,000-ton synthetic rubber plant, first of the big government owned plants comprising the bulk of the synthetic rubber program, has been placed in operation by United States Rubber Company at Institute, W. Va.

The Institute plant, which is the world's largest synthetic rubber plant under operation by one company, produces buna S, the type of synthetic rubber chosen for the major part of the government's synthetic rubber program. The butadiene gas, chief ingredient of buna S, is made from alcohol at an adjacent plant operated by Carbide & Carbon Chemicals Corporation.

The rubber produced in this plant will be allocated for use in war products, largely in military and aircraft tires, according to a John P. Coe, general manager, synthetic rubber and Naugatuck Chemical Divisions.

This is the second synthetic rubber plant to be built and operated for the government by United States Rubber Company. The first has been in operation in New England for more than six months.

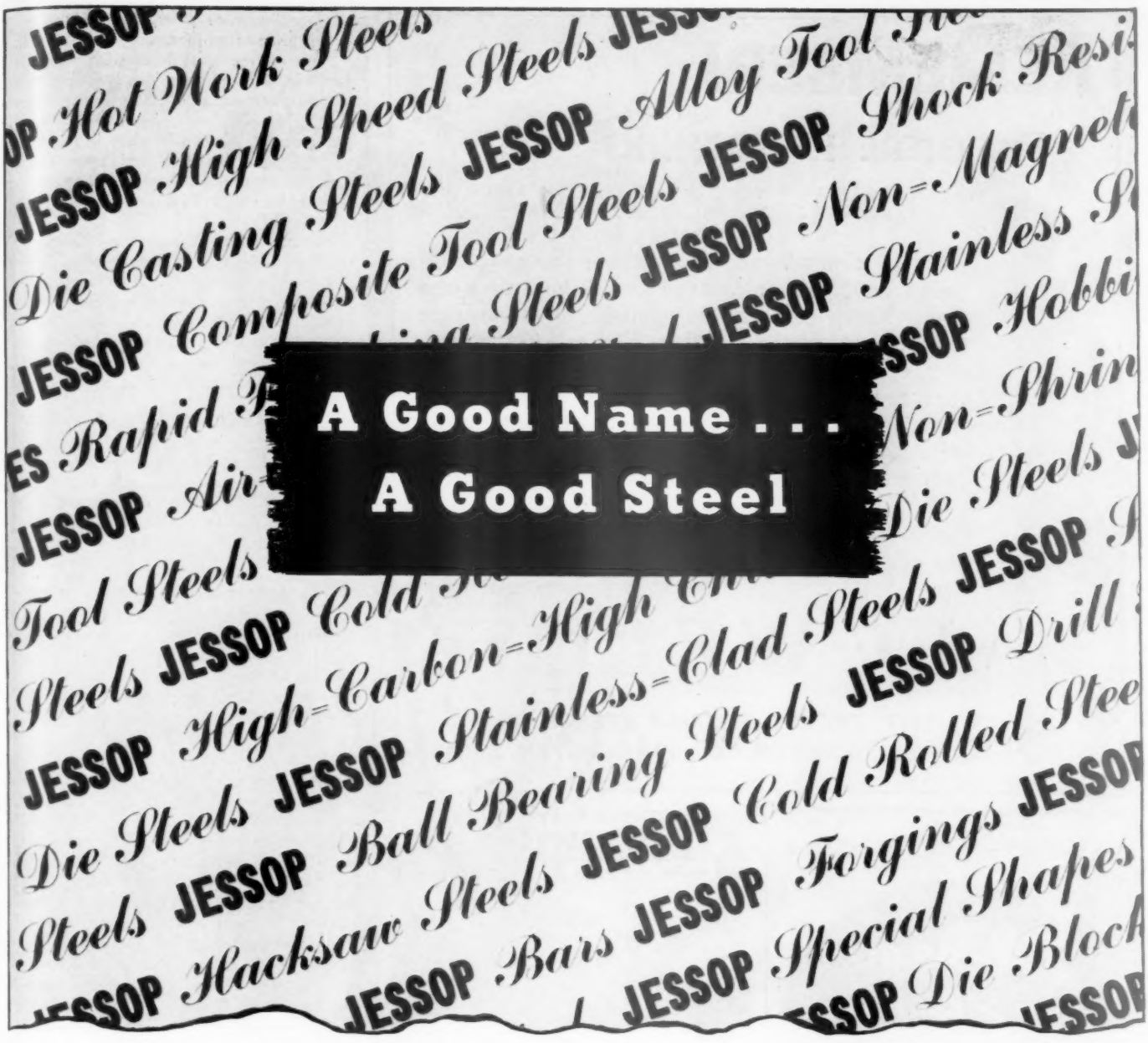
NEW METHODS REDUCE BLACKOUT HAZARDS

New developments plus experience gained during the past year are helping reduce the hazards of blackouts and dimouts and are making these protective measures more effective, Samuel G. Hibben, noted lighting authority, told a meeting of the American Physical Society at Mellon Institute, Pittsburgh, Pennsylvania. Mr. Hibben, who is director of applied lighting at the Westinghouse Lamp Division, Bloomfield, N. J., predicted a greater reduction in the accident toll during blackouts and dimouts once full advantage is taken of modern lighting and safety devices.

"Present day industrial architecture" he said, "represents the ideal in industrial protection. It provides such important features as windowless construction, shatterproof glass, minimum of skylights, neutral exterior coloring and light interior painting.

"Even in older industrial plants not so equipped, however, it is possible to have such protection by making full use of the most modern lighting and safety devices. The blackouts must be effective, but not

(Continued on page 218)



★ For more than 42 years we have been producing highest quality alloy tool steels. This experience has been of inestimable value for we have increased our capacity many times to help meet today's tremendous steel demands. Moreover, our chemical and metallurgical facilities have kept pace because quality is the primary consideration in the manufacture of Jessop Steels. For your convenience we maintain warehouse stocks in many war production centers. Our staff of technical field representatives is at your service — call on them for assistance regarding the applications and availability of Jessop Quality Steels.

WAREHOUSES:

- CHICAGO
- CLEVELAND
- CINCINNATI
- HARTFORD
- DETROIT

★

JESSOP
STEEL COMPANY

HEAD OFFICE AND WORKS

Washington . . . Penna.

ESTABLISHED 1901

When writing Jessop Steel Company please mention Purchasing

REMEMBER!

THERE IS NOTHING JUST LIKE LOWELL'S

Incomparable when a rugged socket wrench is required, especially in tight places or long runs and where heavy leverage is needed. Used on pipe coupling, steel construction, timber bolting, culvert connecting, staybolt caps, cable clamps, grease plugs, countersunk plugs, tunnel liner plates, wood tank and silo bands, railroad track bolting, water gates, etc. A time-saving tool in refineries and on construction jobs.

Today WAR JOBS must come first but we are doing our best on all orders.

LOWELL

1869 THE OLD RELIABLE WRENCH 1943

LOWELL WRENCH CO. WORCESTER, MASS.

"TO ECONOMIZE—GALVANIZE AT ENTERPRISE"

We can give you 24-hour service . . . on most orders of most sizes!

FINEST QUALITY WORK

ENTERPRISE GALVANIZING COMPANY

2519 E. Cumberland St., Phila., Pa.

ARMSTRONG-BRAY

STEELGRIP

FLEXIBLE BELT LACING

Prompt Delivery!

—on both standard types of belt lacing.

STEELGRIP that is applied with a hammer that penetrates belting easily and clinches securely to make a strong, flexible, smooth joint. 2-piece hinged rocker pins take up wear. In boxes or long lengths for wide belts, it compresses belt ends and prevents fraying. 8 sizes.

BELT HOOKS

Applied with any standard make lacing machine, these belt hooks come on double (patented) aligning cards that hold hooks in perfect alignment and prevent card end waste. 6 sizes.

ARMSTRONG-BRAY & CO.

"The Belt Lacing People"

5378 Northwest Highway Chicago U.S.A.

(Continued from page 216)

at the price of an increasing accident toll.

"One of the most interesting developments in blackout technique had been that of phosphorescent and fluorescent materials," Mr. Hibben pointed out. "Phosphorescent coatings will glow in the dark without light being shined upon them, while fluorescent materials glow when irradiated by ultraviolet light which itself is invisble."

Recommending the use of luminous markers and signs to denote exits, doors and factory aisles, Mr. Hibben also described its use on clothing and automobile exteriors. In addition, he added, phosphorescent coatings may be used to outline door knobs, switches, stairs, railings, paths to air raid shelters and in many other locations.

"Blackout accidents are not necessary," he said. "Early in this war, thousands of persons in Great Britain were injured because of blackout accidents in the homes and streets. We want to prevent that from happening here as much as possible —whether or not bombs fall."

WOMEN DEMAND STYLE IN WORKING CLOTHES

American women engaged in war jobs visualize their working clothes as the uniform of the day, but this visible costume which identifies them with the war effort must be safe, comfortable, practical and attractive. Diminutive sizes of men's overalls don't fit, aren't comfortable, and just won't do, according to Miss Mary Horgan of Boston, Mass., assistant to the New England Division engineering manager of the American Mutual Liability Insurance Co. According to Miss Horgan, women wish to dress attractively even on the dirtiest jobs. "The appropriate uniform brings a spirit of teamwork into the plant", she said. "It eliminates envy and competition. It saves street clothes, and satisfies the natural desire of every woman to be well dressed. Miss Horgan reported that practical requirements of working clothes for women have been incorporated in standards and specifications evolved by the American Standards Association, stating that the standards would simplify the problem for all concerned—makers, employers, safety engineers, and above all, the women.

PIWC WARNS OF OIL SHORTAGE

In a report submitted to the Petroleum Administration for War, the Petroleum Industry War Council warns that a crude oil shortage looms at the end of 1943 unless steps are taken to break the bottlenecks which are hampering the industry.

The Council's study reveals that current production averages 3,000,000 barrels daily and it estimates that overall 1943 demand, minimum essential, will average 4,100,000 barrels daily. Thus the difference between the current output and 4,100,000 will have to be made up in the latter part of the year. All the efficient producing capacity from presently known fields will be needed by the end of the

(Continued on page 220)

New products arising out of the stress of war will shape the pattern of your postwar production. Long-range planning to meet changing conditions, keen competition, new discoveries will bring rich rewards.

Our knowledge of casting non-ferrous metals, accumulated during almost 70 years, is a vast source of helpful information. Consult with our experienced engineers and metallurgists for new ways and short-cuts to unexpected profits.

N·B·M

NON-FERROUS CASTINGS

BRONZE BEARINGS AND BARS

NATIONAL BEARING METALS CORPORATION

ST. LOUIS • NEW YORK

PLANTS IN: ST. LOUIS, MO. · PITTSBURGH, PA. · MEADVILLE, PA. · JERSEY CITY, N. J. · PORTSMOUTH, VA. · ST. PAUL, MINN. · CHICAGO, ILL.

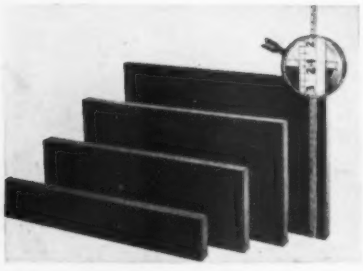
When writing National Bearing Metals Corporation please mention Purchasing

GENEROUS FREE SAMPLES TO PURCHASING AGENTS

THE BALDWIN-HILL COMPLETE LINE OF INSULATIONS

No. 1 CEMENT

Generous 5-lb. sample of this plastic water-mixed cement. It insulates any surface against temperatures up to 1800° F. It can be readily applied by spotting on and troweled to a smooth surface. It contains a rust-inhibitor which guarantees a permanent bond on iron. Sample is large enough to cover 3 sq. feet, one inch thick.



MONO-BLOCK

A unique insulating block for ALL high-temperature installations up to 1600° F. Made from black rock-wool, so that it refuses to break down or disintegrate under great heat or unusual moisture. Exceptionally high insulating value.

FELT

The coming insulation material. A square-cut, clean felted mass of black rock-wool which can be as light as 4 lbs. per cubic foot, yet does not settle or break down. Excellent insulating qualities for temperatures of –150° to 800° F. See it.

KOLDBOARD

A widely used low temperature insulation with very low thermal conductivity — incapable of supporting combustion. Semi-rigid, it does not pack or settle. For generous sample showing its ease of application, write at once.

COMPLETE CATALOG

Send for samples of products above or for our complete catalog showing also Insulating Blankets, Pipe Coverings, Fill Materials, Building Insulations, Weatherseal coating, and Bond-Tite insulation adhesive. Samples or catalog sent promptly. Just write on your letterhead to

BALDWIN-HILL *Insulations*

562 KLAGG AVE., TRENTON, N. J.

NEW YORK • CHICAGO KALAMAZOO

(Continued from page 218)

year to take care of ancipated minimum demands, and that additional discoveries must be made, not only to provide a factor of safety of about 10%, but also to provide the actual minimum demands at the end of this year and in 1944 and 1945.

To insure a continuous supply of oil, the Council, after considered judgment, has recommended that the industry be given materials with which to carry on activities and the experienced men available to intelligently search for, find and produce the oil, through the normal economy of proper price.

In specific reference to price and the recent statement of the Office of Price Administration that an increase in crude oil prices is not warranted— a rejection based on a report by the Tariff Commission—the Council asserts:

"After careful consideration of the findings in this report, it is the judgment of the committee that the report is insufficient to furnish a base on which to freeze petroleum prices. It is historical in its scope, based on costs now obsolete. It omits consideration of 30% of the production, 50% of the wells, and 85% of the producers.

"The 85% not covered by the report are obviously the smaller producers, and those who produce less per well, whose costs average much higher than those producing from larger wells. It makes no effort to furnish an answer to the most important question now confronting us, namely, the cost of finding new oil".

PETROLEUM AND PRODUCTS

The Office of Price Administration has ruled that provisions of Revised Procedural Regulation No. 1 apply to petitions for exceptions under Revised Price Schedule No. 88—Petroleum and Petroleum Products.

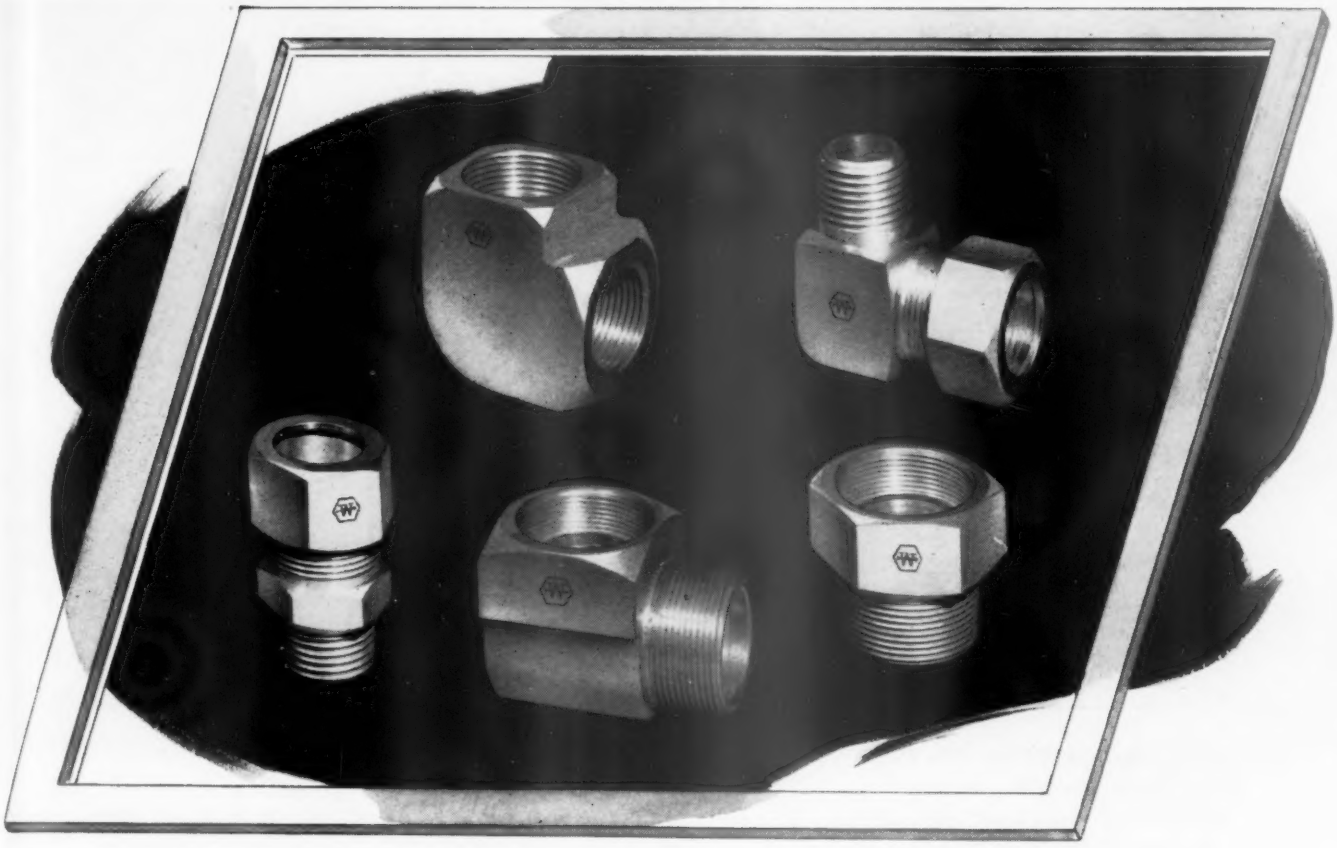
All procedural requirements for filing petitions for individual price action are set forth in the Procedural Regulation relating to adjustments. It was always intended that petitions for exception permitted under particular price schedules should be filed under Procedural Regulation unless otherwise provided in the scheedule. To remove any doubt as to the procedure under Schedule 88, Amendment No. 84 was issued, effective April 2.

COMPLETES 100 OCTANE GASOLINE PLANT

J. Frank Drake, president of the Gulf Oil Corporation, announces the completion of a new Houdry catalytic cracking unit for the production of 100-octane aviation gasoline at its Port Arthur refinery. This unit will greatly increase the production of 100-octane aviation gasoline, the super fuel required by bombers and fighter planes to carry the war to Berlin and Tokio.

The completed unit is a part of Gulf's aviation gasoline program being carried out in cooperation with the Government. This unit was rushed to completion with

(Continued on page 224)

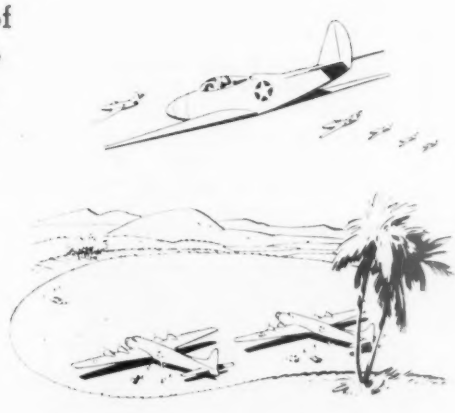


Look ahead with Weatherhead

• The Weatherhead Hex with the Weatherhead arrow is the mark of quality of the world's largest manufacturer of fittings and flexible hose assemblies.

Relying upon the Weatherhead mark of quality for accuracy, dependability and ease of installation, automotive, aviation, machine tool and refrigeration industries are "Looking ahead with Weatherhead" in today's global warfare as well as the progress which peace will surely bring.

Typical of Weatherhead production for industry are Weatherhead patented inverted, S A E, and compression tube fittings for industrial, automotive and refrigeration installations.



THE WEATHERHEAD COMPANY • CLEVELAND, OHIO
Branches: **Detroit • Los Angeles • New York • St. Louis**

WEATHERHEAD

WORLD'S LARGEST PRODUCERS OF FITTINGS AND FLEXIBLE HOSE ASSEMBLIES

PLANTS IN CLEVELAND, OHIO • COLUMBIA CITY, INDIANA • LOS ANGELES, CALIFORNIA • ST. THOMAS, ONTARIO, CANADA

When writing The Weatherhead Company please mention Purchasing

Question every fastening job

Mobile Refrigeration, Inc., Long Island City, New York, chooses P-K Self-tapping Screws for Assembly of Several Different Materials

1. Type A — Driven through steel angles into Masonite housings.
2. Type A — Four screws in each of three adjustable hinge plates hold up a 350 lb. door. Fastening is steel plate to birch.
3. Type A — Two screws in each of three hinge butts. Fastening is steel plate to birch.
4. Type A — Two screws in each of three adjustable door fasteners. Fastening is steel plate to birch.
5. Type A — Fasten frame for door glass. Driven through steel into birch.
6. Type A — Hold door armor in place. Driven through steel into birch.
7. Type Z — Fasten chamber unit to base casting. Driven through Masonite into ⅛" angle iron.
8. Type Z — Fasten steel baffle plate to steel angles. These screws are silver coated to withstand extreme testing temperatures.

260 TAPPING OPERATIONS ELIMINATED ON EACH UNIT-

Man-hours and tools saved—Assembly made stronger with P-K Self-tapping Screws

Assembly of this high altitude test-and-calibration-chamber for aircraft and electronic instruments was greatly simplified, and the product made stronger, when the maker wisely "questioned every fastening".

Of more than 500 fastenings required, about half are metal-to-metal, for which machine screws were formerly used. When these were replaced by P-K Type "Z" Screws, 260 tapping operations were eliminated. Since P-K Self-tapping Screws tap their own strong threads as they are driven, one easy operation completes the fastening. They save the man-hours used up in tapping . . . they also eliminate grinding, breakage and replacement of hard-to-get taps.

Assembly of the unit also involves a large number of metal-to-wood and metal-to-Masonite fastenings. Experiments showed that P-K Type "A" Screws would afford much greater security than the conventional wood screws which had been used. Stronger fastenings result because P-K Type "A" Screws are threaded all the way to the head, and are uniform in dimension.

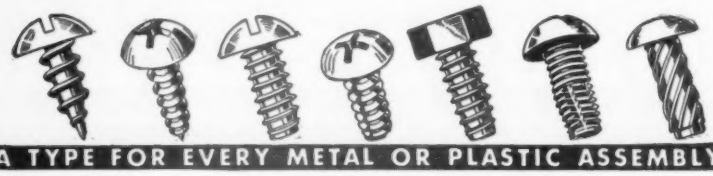
War production needs all the man and tool hours P-K Self-tapping Screws can save. Question every fastening job in your plant . . start now! Call in a P-K Assembly Engineer to help you search out *all* opportunities to apply P-K Self-tapping Screws. Or, mail assembly details for recommendations. Parker-Kalon Corp., 202-204 Varick St., New York.

PARKER-KALON

Quality-Controlled

SELF-TAPPING SCREWS

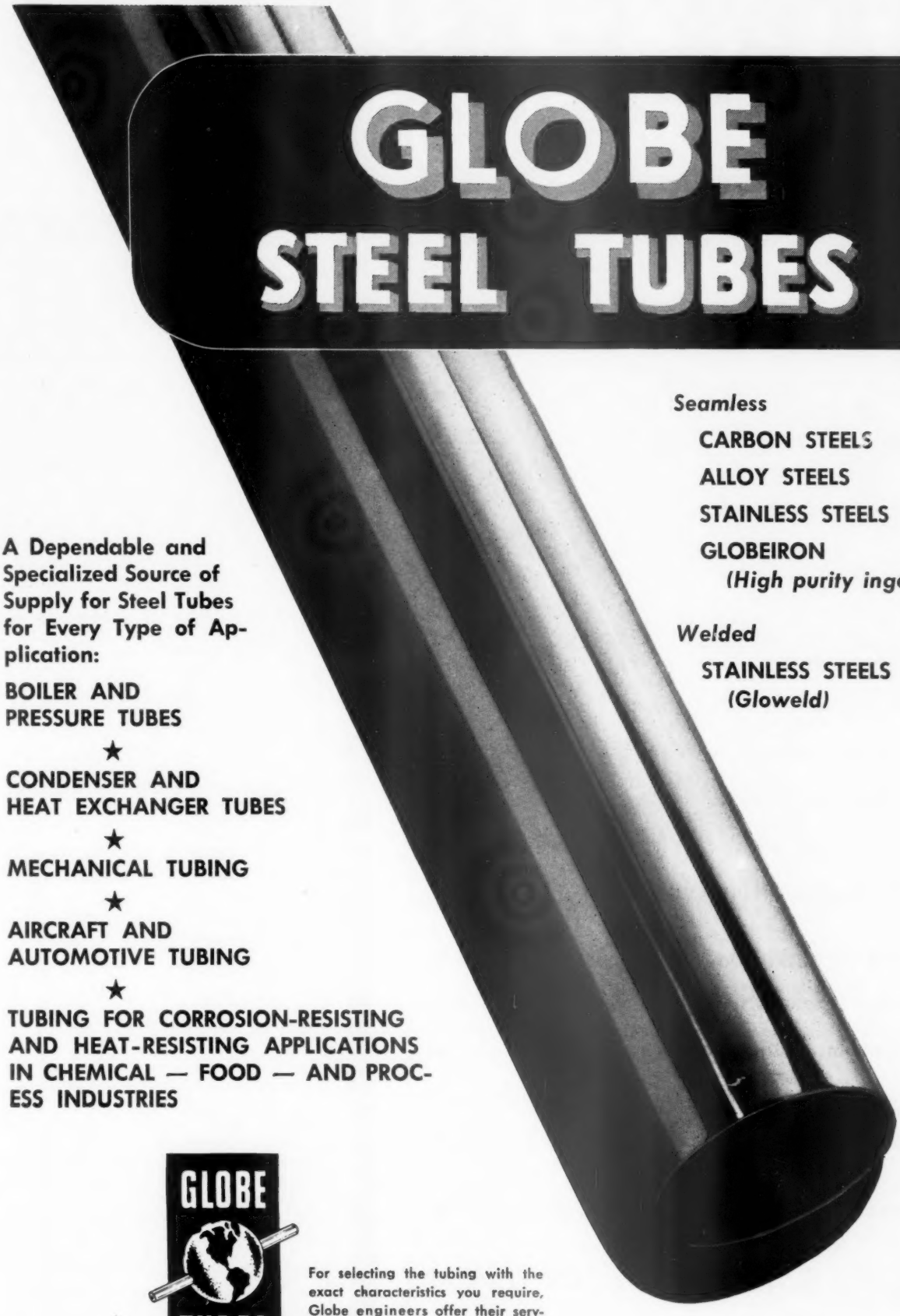
Give the Green Light • to War Assemblies



A TYPE FOR EVERY METAL OR PLASTIC ASSEMBLY

When writing Parker-Kalon Corp., please mention Purchasing

GLOBE STEEL TUBES



Seamless

CARBON STEELS

ALLOY STEELS

STAINLESS STEELS

GLOBEIRON
(High purity ingot iron)

Welded

STAINLESS STEELS
(Gloweld)

A Dependable and Specialized Source of Supply for Steel Tubes for Every Type of Application:

BOILER AND PRESSURE TUBES

★

CONDENSER AND HEAT EXCHANGER TUBES

★

MECHANICAL TUBING

★

AIRCRAFT AND AUTOMOTIVE TUBING

★

TUBING FOR CORROSION-RESISTING AND HEAT-RESISTING APPLICATIONS IN CHEMICAL — FOOD — AND PROCESS INDUSTRIES

GLOBE TUBES

For selecting the tubing with the exact characteristics you require, Globe engineers offer their services, with excellent laboratory facilities and production capacity to assure economy and quality control.

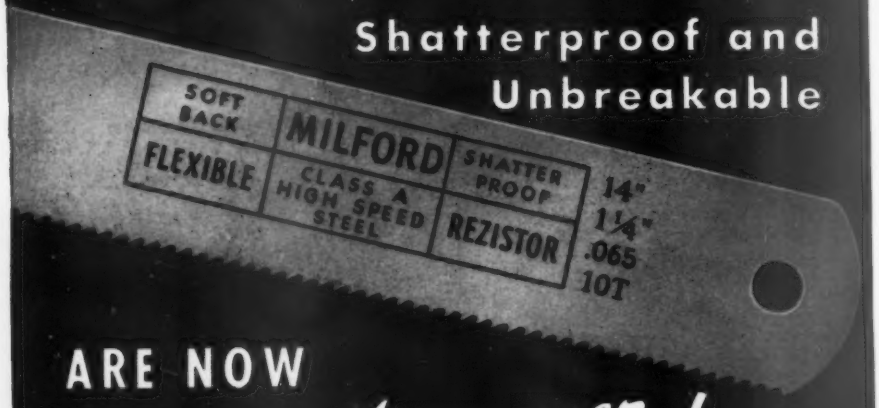
GLOBE STEEL TUBES COMPANY
MILWAUKEE, WISCONSIN, U.S.A.

When writing Globe Steel Tubes Company please mention Purchasing

MILFORD

FLEXIBLE REZISTOR HACKSAW BLADES

Shatterproof and Unbreakable



ARE NOW

Better than ever!

A better heat-treating method, developed in our own shops, together with an improved steel, have resulted in more uniform and sharper blades . . . so greatly improved that they are equal or superior to 18-4-1 High Speed Steel on any job!

Fast cutting, shatterproof, and unbreakable under excessive pressures and shocks, it is more than ever the blade for insuring trouble-free production on your automatically fed hacksawing machines. *It will pay you to specify* MILFORD FLEXIBLE REZISTOR *by name.*

Hand Sizes Have Easy-Starting Teeth

THE HENRY G. THOMPSON & SON COMPANY

NEW HAVEN, CONNECTICUT

also manufacturers of Milford Profile Saw . . . THE blade for all contour and profile band saw machines.

(Continued from page 220)

the aid of a directive of the War Production Board. It was entirely financed by the Gulf Oil Corporation, which to date has expended something like $15,000,000 on increasing its aviation gasoline facilities at Port Arthur. The entire output of these facilities is supplied to the fighting forces, being under contract to the Government.

MAINTENANCE MANUAL ISSUED BY OFFICE OF DEFENSE TRANS.

Owners of all types of trucks, buses and passenger cars who have had difficulty setting up regular upkeep and service plans for their vehicles can now obtain a simple and complete manual covering common maintenance practice, the ODT announces.

Based on a preventive maintenance report prepared by the Society of Automotive Engineers at the request of the Office of Defense Transportation, the manual sets forth the ABC's of vehicle maintenance and outlines the kind of inspections, checks and adjustments that should be made to assure efficient and economic operation of all types of motor vehicles.

The manual makes available to the average truck, bus or passenger car operator the basic rules of maintenance which have been employed and perfected by fleet operators and maintenance experts over a period of years. It is being distributed by the Office of Defense Transportation as an aid to vehicle owners who want to keep their equipment in top-flight condition during the war transportation crisis but who have been unable to set up a specific maintenance plan because of a lack of easily applied information.

NEW HANDBOOK ON AIRCRAFT ALLOY STEEL

Aircraft Alloy Steels is the title of a recent combined special stock list and data book published by Joseph T. Ryerson & Son, Inc. The booklet was designed as a practical guide to aircraft steel stocks, prices, sales limitations, and specifications. It is available to all buyers and technical men in the Aircraft and Aircraft Parts Manufacturing Industries. This piece of service literature was published almost simultaneously with the arrival of stocks of aircraft alloy steels at the Ryerson warehouses in Chicago, St. Louis, Cincinnati and Jersey City that have been appointed to carry alloy steels for the exclusive use of aircraft and parts manufacturers.

In addition to the listings of available steels, this publication furnishes a condensed version of all the Aeronautical Material Specifications (AMS) which pertain to steel. These AMS specifications, originally developed by the Society of Automotive Engineers, are presented in brief tabular form to serve as a quick guide for the identification of the essential requirements of each specificaton.

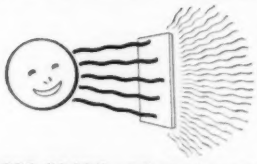
The Army Navy Aeronautical Specifications (AN-S and AN-T), which cover the new NE National Emergency Steels

(Continued on page 226)

HEAVY MACHINERY MANUFACTURER INSTALLS BLUE RIDGE FROSTED AKLO GLASS

. . . "Reduces Glare—Cuts Down Heat, Creates More Comfortable Working Conditions"

THE 3R's OF FROSTED AKLO



REDUCES GLARE—Eliminates eyestrain and employee fatigue.

RETARDS SUN HEAT—Keeps workers comfortable on their jobs.

RENDERS SAVINGS—Eliminates shades or painting of glass.

COSTLY EYESTRAIN FROM GLARE ELIMINATED BY FROSTED AKLO

With wartime requirements demanding top quality and maximum production, many manufacturers have turned to Blue Ridge Frosted Aklo in factory windows to assure results.

Frosted Aklo reduces eyestrain by softly diffusing incoming natural light. It absorbs approximately 97½% of the sun's infrared heat rays. It eliminates costly shades, awnings or regular painting of ordinary glass.

By helping employees do more and better work and contributing to lowered operating costs in air-conditioned areas, it aids production for the war effort.

Frosted Aklo is made by the Blue Ridge Glass Corporation, Kingsport, Tenn., and is sold by Libbey·Owens·Ford through leading glass distributors. It is available in hammered and ribbed patterns, both wired and unwired. Write for complete information. Blue Ridge Sales Division, Libbey·Owens·Ford Glass Company, Room 553 Nicholas Building, Toledo, Ohio.

L O F

BLUE RIDGE AKLO GLASS

Heat-Absorbing • Glare-Reducing • Figured and Wire Glass

BLUE RIDGE GLASS CORP. MANUFACTURERS OF QUALITY GLASS KINGSPORT, TENN.

When writing Libbey-Owens-Ford Glass Company please mention Purchasing

GRIFFIN
Hack Saw Blades

FOR YOUR METAL CUTTING JOBS

Trade Mark

Made by G. W. GRIFFIN CO., Franklin, N. H.

Now when every minute counts, the men who cut metal are finding GRIFFIN BLADES are the answer for results.

Their consistently uniform performance has made GRIFFIN the "buy word" among mechanics who appreciate dependability. The line is complete, GRIFFIN Molybdenum, High Speed, Soft Back (Flexible), Non-Strip and Soft Center (Flexible).

Distributors everywhere have GRIFFIN Blades. Insist on Griffin from your local Distributor today.

ATTENTION PURCHASING AGENTS
OUR LARGE PRODUCTIVE CAPACITY ENABLES US TO SHIP HACK SAW BLADES QUICKLY

•

General Sales Agents
JOHN H. GRAHAM & CO. INC.
105 DUANE ST. NEW YORK CITY

(Continued from page 224)

acceptable to the aircraft industry, are also condensed in tabular form. While both these sets of specifications have been made as complete as space will permit, and will go far toward making them more familiar, still the booklet recommends that the original specifications be consulted whenever a steel must conform to a given specification in all particulars.

Late in 1942, four of the ten Ryerson Plants at Chicago, St. Louis, Cincinnati, and Jersey City were appointed ACW warehouses and alloted aircraft alloy steel bars by the Aircraft Scheduling Unit of the Aircraft Production Board. These stocks are earmarked for distribution to aircraft manufacturers and their subcontractors. *To avoid long distance freight shipments, these steels are intended for sale in the territories logically adjacent to these four plants, although emergency shipments can be made to other parts of the country when requirements cannot be filled from local stocks.*

The stocks allocated to Ryerson consist of Chrome-Molybdenum bars, hot rolled annealed, cold drawn annealed, cold drawn heat treated, annealed hot rolled, annealed cold drawn. When substitute steels such as NE 8630 and NE 8740 are approved and made available for Aircraft construction they will be included in the Ryerson stocks

SEEK TO SPEED RAIL MOVEMENT OF WAR MATERIALS

In an effort to speed up the movement of war materials and more fully utilize the existing freight-car supply, Joseph B. Eastman, Director of Defense Transportation, appeals to shippers to remove dunnage, nails, strappings, and other debris from cars to permit immediate reloading without first moving the cars to repair or other tracks for cleaning by railroad forces.

PROPOSE PIPELINE TO MIDDLE WESTERN REFINERIES

The construction of a large pipeline to provide middle western refineries with additional supplies of West Texas crude oil is now under study by the Petroleum Administration for War, according to Administrator Harold L. Ickes.

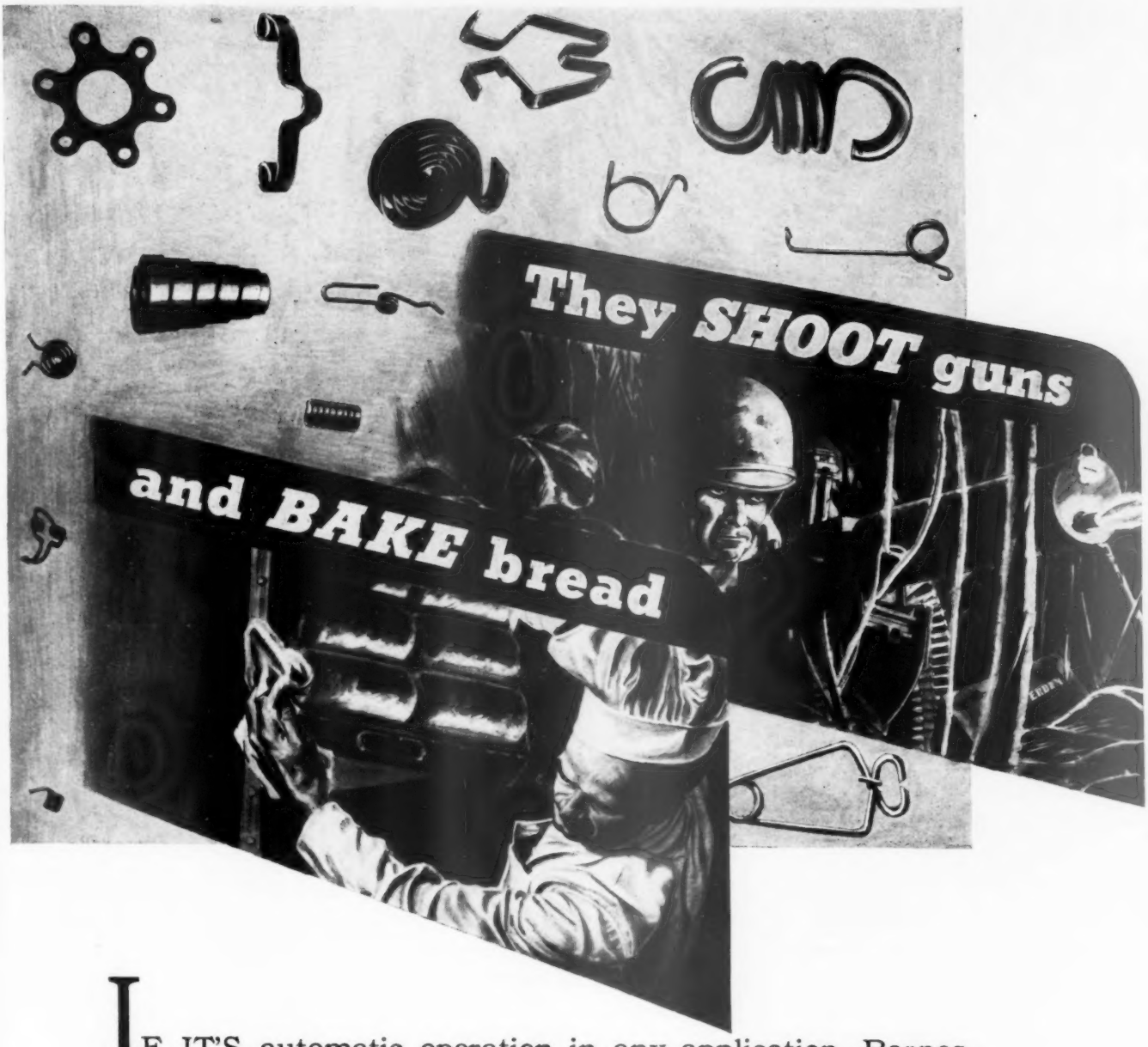
Pointing out that crude oil reserves in mid-continent fields are declining, Administrator Ickes said:

"As a consequence, middle western refineries will ultimately have to be supplied with crude oil from more distant sources, and the problem may become acute before the end of 1944.

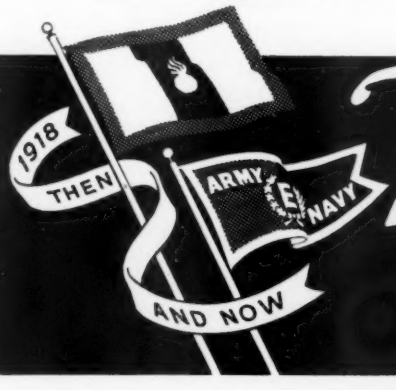
"In the face of that prospect, a pipeline from a central point in the West Texas field—one of the last substantially untapped crude oil reserves presently known in the Southwest—to a point of connection with existing pipelines that serve the middle western refining districts must be given serious consideration.

"The proposed project, with a capacity of from 54,000 to 116,000 barrels per day depending upon the number of pump sta-

(Continued on page 228)



IF IT'S automatic operation in any application, Barnes-made springs are on the job — taking the "socks" of repeated use. Never before have mechanisms been put to harder service — working faster — more hours. It's a job for good springs — for no mechanism is better than its spring. That springs can absorb this extra duty is due mainly to a thorough knowledge of their potentialities. Even the simplest spring can be a powerhouse of almost perpetual motion.



Barnes-made Springs

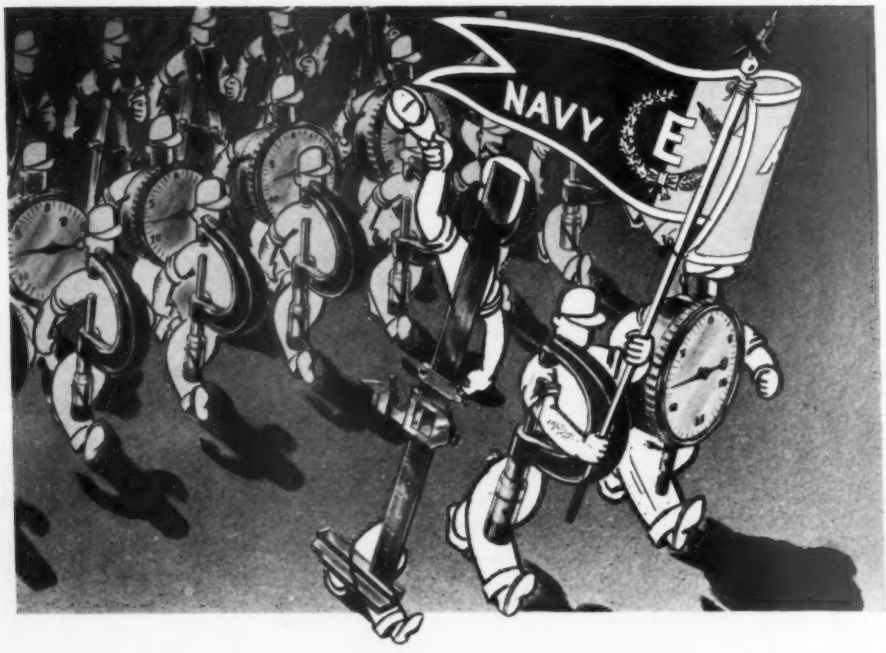
ENGINEERED PEP AND POWER

WALLACE BARNES COMPANY

DIVISION OF THE ASSOCIATED SPRING CORPORATION

BRISTOL, CONNECTICUT

When writing Wallace Barnes Company please mention Purchasing



NOW, THE MAKERS OF STARRETT TOOLS GET THEIR "E" BADGES

It is fitting that the craftsmen and women who have contributed their utmost skill and energy to the fashioning of unprecedented numbers of precision tools—who kept faithfully and constantly at their vital task from the moment the first bomb was dropped on Poland—now wear this badge of honor, evidencing "outstanding achievement in producing war equipment."

Grateful acknowledgment is also due our suppliers and the distributors of Starrett Tools for having done so much to help us attain this honor.

STARRETT TOOLS are lending accuracy and speed and confidence to hundreds of thousands of willing and devoted hands helping to win this war of precision machines and equipment. It is safe to say that virtually every winner of the "E" award has depended directly or indirectly upon the use of Starrett Tools.

The wearing of the "E" badge constantly reminds each and every one of us to keep on doing our level best to produce an adequate supply of the tools worthy of this great responsibility.

THE L. S. STARRETT CO., ATHOL, MASSACHUSETTS, U.S.A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • GROUND FLAT STOCK
HACKSAWS • METAL CUTTING BANDSAWS • STEEL TAPES

(Continued from page 226)

tions installed, is receiving careful study, from the standpoints of petroleum economics, transportation necessities, and engineering, by the Transportation Division of the Petroleum Administration for War."

NUT INTERCHANGE DATA

In accordance with recommendations by WPB, Tinnerman Products, Inc., Cleveland, Ohio, has compiled complete sets of interchange sheets, showing what type of Speed Nuts are interchangeable with other approved self locking nuts for uses in non-structural assemblies and attachments of aircraft.

SOLVENTS VAPORS HAZARDOUS

Discussing the effects of toxic vapors from industrial solvents at convention of the greater New York Safety Council, Dr. Harry Heimann of the New York State Department of Labor's Division of Industrial Hygiene, warned that standards or permissible concentration may be based upon limited data but are abused only with danger. Industrial poisoning from benzol is due to the benzol, he said, and not to any impurities, adding that changes in the blood are confirmatory evidence of benzol poisoning. German authorities, he said, have prohibited women beyond the third month of pregnancy from working in contact with benzol because of its adverse effects.

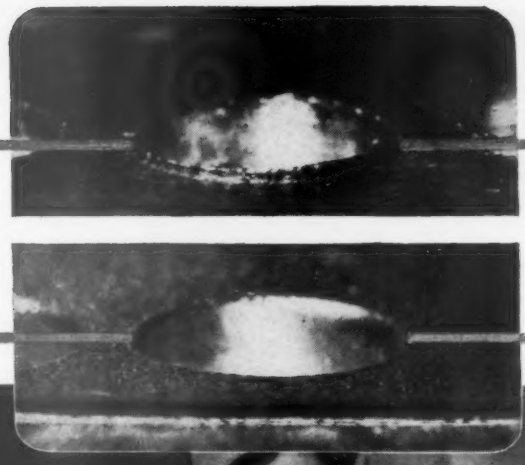
Toluol still is used in some solvents, and while less toxic than benzol may produce narcosis with incoordination, a possible cause of accidents. Trichlorethylene, widely used in degreasing operations, is not necessarily hazardous under properly controlled conditions, according to Dr. Heimann. Mild narcosis has been produced by carbon tetrachloride of low concentration, while the effects of exposure to petroleum naptha vary.

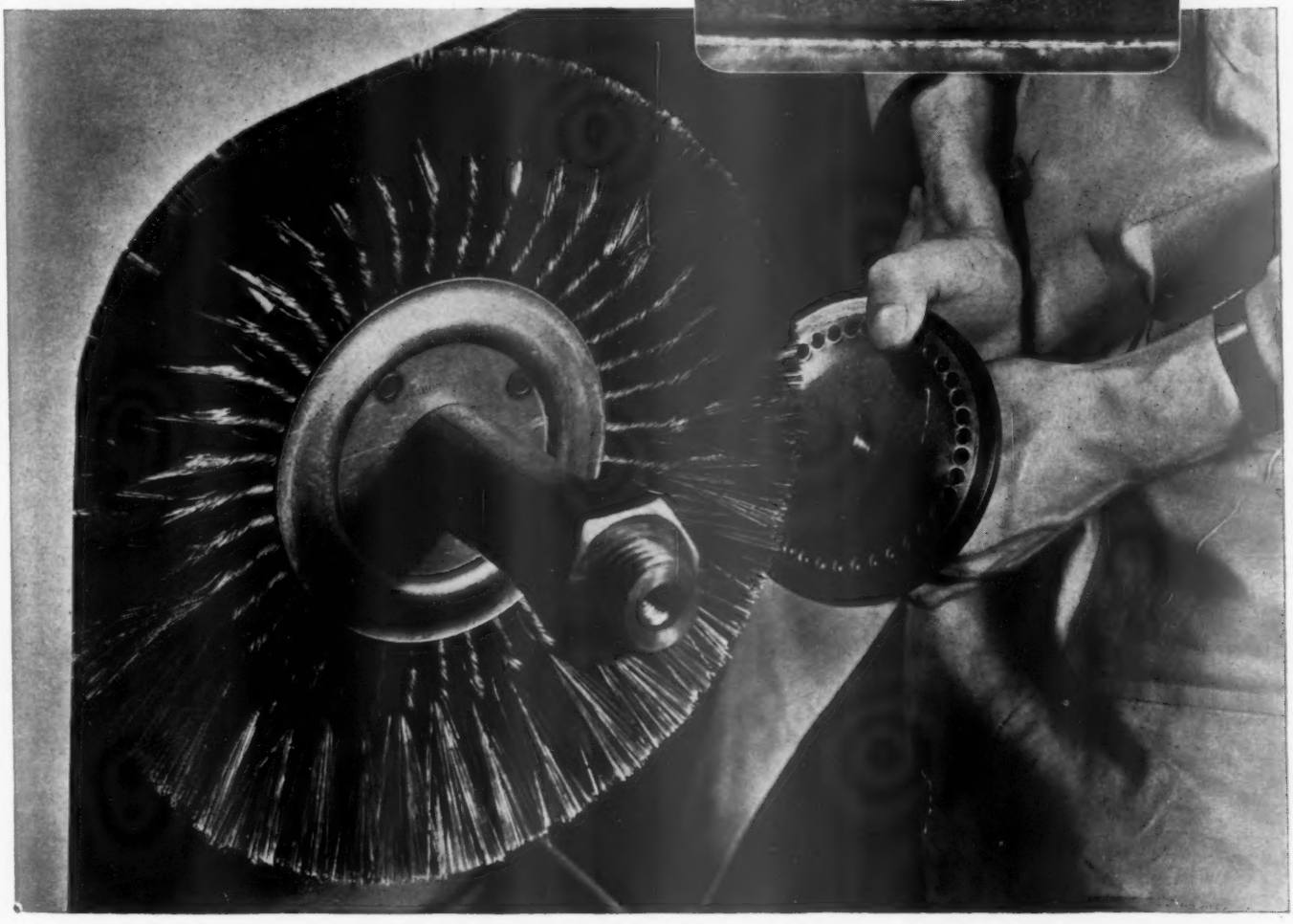
1800 "STITCHES" A MINUTE

Resistance Welding is done by machines which have water-cooled copper jaws that bite down to hold together the two pieces of metal being welded, says Edwin H. Vetter, Westinghouse engineer. Then electricity shoots through the jaws and into the metal, creating heat to weld the two inner surfaces tightly together. On some jobs the jaws are replaced by copper wheels that roll over the metal, making continuous seam between the two pieces. Some metals used in aircraft are so difficult to weld that a fingerprint on their surface will increase the metal's resistance, create more heat and noticeably affect the strength of the seam. American warplanes can now be sewn together at speeds as fast as 1800 welding "stitches" a minute. This fast method of fabricating aluminum and stainless steel for planes depends upon precise control and that is now being supplied by electronic tubes that have no moving parts to get out of order. Some of these tubes act as switches, jumping

(Continued on page 230)

It levels the hills around craters of steel





THEY'RE urgently needed, these circular plates with the 30-odd holes. By the tens of thousands they're going into a certain war-essential product.

But notice in the magnified view above, the ragged burrs that border each hole when the piece comes from the punch press. It was important to remove those burrs and break the corners.

An Osborn Brushing Specialist recommended the Osborn Brushing Wheel shown above, to be used with a simple holder for the plate. The brushing action of the wheel revolves the plate on its shaft and every trace of burr is removed from all the holes in less time than it takes to tell about it. (See lower magnified view.)

This is another example of how Osborn Brushing Wheels are speeding production and improving quality in war work. Removing burrs, breaking corners, forming radii, eliminating scratches, tool marks and other imperfections from highly-stressed parts, preparing metal for welding, and cleaning the bead afterwards . . . these are the jobs for Osborn Brushing Wheels, the jobs they do faster, better, and at lower cost.

There's an Osborn Brushing Specialist in your area ready to help war plants with war-production problems. Reach him through *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland, Ohio.*

Osborn Brushes

WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

WHERE A SLIP MEANS A REJECT...

PROTECT THE WORK WITH PARKERS!

Another slip . . . another reject . . . valuable man-hours lost, critical materials spoiled! That's what happens when work slips in a vise. That's why so many plants doing important war work use Parker Vises!

Parkers grip work evenly, firmly . . . with accurately controlled pressure. No slack to take up when gripping or releasing because precision-built Parker Vises respond to the slightest turn of the handle! Pinned-on tool steel jaws, covering the vise-top, lengthen the life of the tool . . . are easily renewable. The Charles Parker Company, Meriden, Conn., U.S.A.

Handled by Leading Distributors

PARKER VISES — AMERICA'S OLDEST

PATCH FLOORS
. . . while Traffic Rolls

Here's a new, fast way to patch broken concrete without having to close off the area. Use durable INSTANT-USE . . . a tough, plastic material which you simply shovel into hole—tamp—and run traffic over immediately. NO WAITING. Bonds tight to old concrete. Makes smooth, solid, heavy-duty patch. Withstands extreme loads. Keep a drum on hand for emergencies. Immediate shipment.

Request Descriptive Folder and Details of

FREE TRIAL OFFER

INSTANT-USE
FLEXROCK CO. 2319 Manning St., Phila., Pa.

You Too Can Increase PRODUCTION

Get the facts on

ACME VISIBLE PRODUCTION CONTROL SYSTEMS

Wire or write for your copy of illustrated catalog No. 417

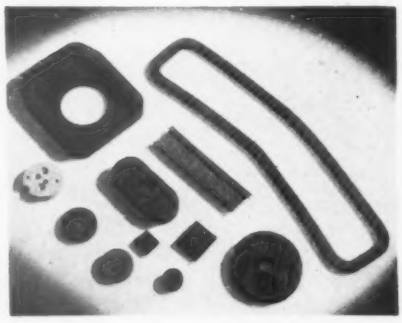
ACME VISIBLE RECORDS, INC.
122 So. Michigan Avenue
Chicago, Illinois

(Continued from page 228)

into action in one twenty-five hundredth of a second to start the weld. Other tubes measure out electric power in exact doses to make each switch uniformly strong.

NEW USES FOR FELT

It took a second world war to demonstrate the remarkably wide adaptation to industrial use of felt—one of the world's oldest materials. Especially in the air-



craft and automotive fields, chemists and design engineers have collaborated to employ felt, treated and formed for numerous tasks heretofore done with rubber, synthetic rubber, copper and other critical metals. Western Felt Works' chemists and engineers have contributed greatly to relieve material problems. Here is shown a grouping of cut and molded felt shapes, many chemically treated to resist oil and water, being built into essential war goods.

SYNTHETIC INDUSTRIAL TIRES

Successful application of synthetic rubber to industrial tires in operation in one of the country's largest steel mills is reported by The B. F. Goodrich Company.

Four experimental tires, constructed entirely of synthetic rubber were built, two of the 22x16x16 and two 22x12x16. They are of the Press-On type, for use on industrial power trucks and are being operated in the plants of the Jones & Laughlin Steel Corporation at Pittsburgh.

Latest reports on the tire performance is that they are holding up as well as tires made of natural rubber which previous to the rubber shortage were used in this type of service.

SEEK IDLE MOTORS AND GENERATORS

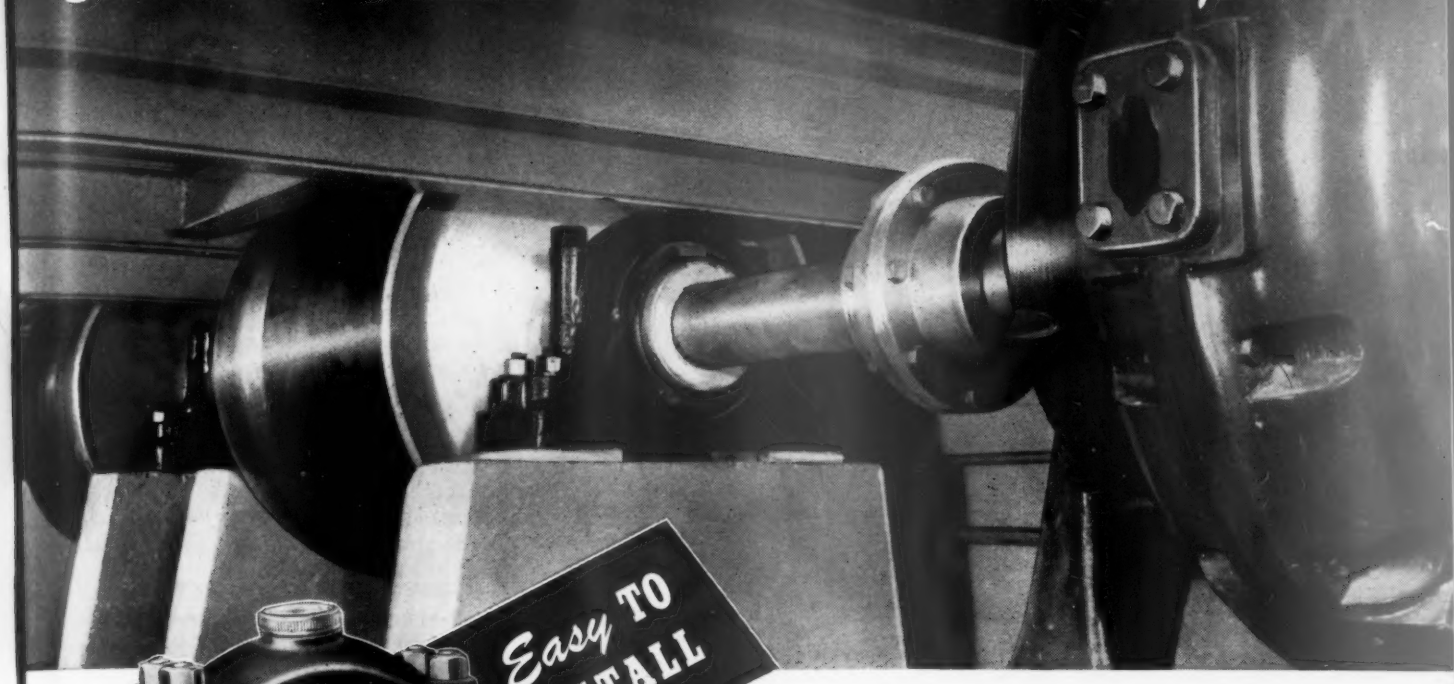
The War Production Board is doing its utmost to locate every idle electric motor and generator and get it back into active service, John Gammell, Chief of WPB's Electrical Equipment Branch, declared in a statement calling upon industry to cooperate with the Division by listing idle motors and making full use of its services in obtaining secondhand equipment.

Restrictions on purchase orders for new motors and generators imposed by General Conservation Order L-221 as amended January 15, Mr. Gammell pointed out, are designed to insure full use of second hand equipment. A purchase

(Continued on page 232)

RUGGED DODGE-TIMKEN BEARINGS

get more *Battle Power* out of *Horsepower*



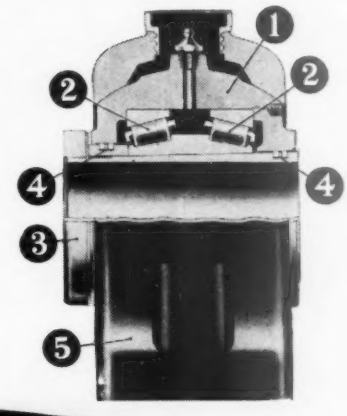
Super-rugged . . . Dodge-Timken bearings have what it takes to withstand the "beatings" bearings get in today's 168-hour weeks of war production. Completely assembled . . . ready for instant installation . . . capable of 30,000 hours of service . . . pre-lubricated for 50-million revolutions under normal conditions without relubrication . . . sealed against admission of dirt or leakage of lubricant. They eliminate maintenance delays . . . conserve vital man-hours and critical materials . . . speed peak production.

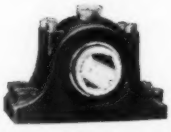
Advantages of DODGE-TIMKEN SPECIAL DUTY BEARINGS

1—Full ball and socket self-alignment . . . guards against power waste and wear. 2—Timken tapered roller bearings give full radial and thrust load capacity . . . put full power in production. 3—Easy to install—simply slip over shaft and tighten collar. 4—Piston ring seals retain lubricant and exclude dirt. 5—Rugged outer housing gives over-all protection to bearing.

Contact Local Dodge Distributor or write to

DODGE MANUFACTURING CORPORATION, Mishawaka, Ind., U.S.A.

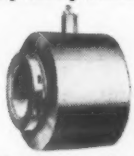




Dodge-Timken Special Duty Ball-and-Socket Pillow Block

Dodge-Timken Special Duty "D" Unit Mount

Dodge-Timken Special Duty "S-1" Unit Mount

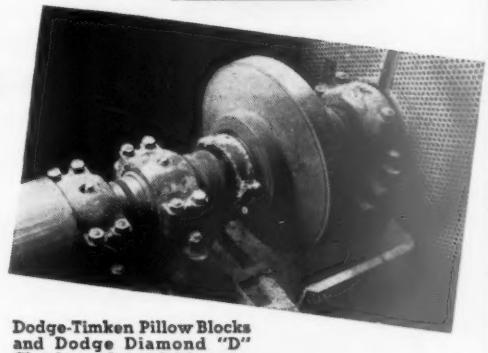


Dodge-Timken Special Duty "B-1" Unit Mount

DODGE
MISHAWAKA

THROW ALL YOUR SCRAP INTO THE FIGHT! . . . BUY MORE WAR BONDS!

THE RIGHT DRIVE FOR EVERY JOB



Dodge-Timken Pillow Blocks and Dodge Diamond "D" Clutch . . . dependable operation . . . low maintenance.

PUT *ALL* YOUR POWER IN THE JOB

LEVINSON

Warehouse STEEL PRODUCTS

Hot Rolled Sheets, Strip, Flats, Bands, Rounds, Squares, Hexagons; Bar-Sized Angles, Channels, Zees, Tees; Structural Angles, Beams, Channels; Plates and Checker Plates; Reinforcing Bars; APS Protected Steel Roofing and Siding.

LS LEVINSON STEEL

LEVINSON STEEL SALES CO.

Warehouse and Specialty Steel Products

33 PRIDE STREET · PITTSBURGH, PA.

(Continued from page 230)

order for new motors or generators must have a preference rating of AA-5 or higher and the prospective buyer must certify that he has made every reasonable effort,—

1. to adapt idle motors or generators in his possession to the purpose for which new ones are sought;

2. to obtain used equipment from other sources;

3. to repair or recondition his existing equipment.

"To assist industry in locating idle motors and generators," he stated, "the General Industrial Equipment Division has set up a Used Motor Unit in its Electrical Equipment Branch. The Unit has a file of about 30,000 used motors and generators including those listed by motor dealers with the OPA and those available in industrial plants. This file, which covers the entire country, is compiled from data received from the WPB field offices and directly from dealers and industrial plants and is kept currently up to date."

IMPROVE QUALITIES OF WOOD

Chemical science is capable of endowing wood with qualities that vastly improve upon nature, according to E. B. Alvord, head of the Specialty Chemical Section of the du Pont Company's Grasselli Chemicals Department. "Retaining all its inherent advantages for construction —workability, economy, low heat conductivity and ease of replacement, the chemist can supply the post-war building industry with lumber treated so as to be a distinctive structural material in its own right," he said.

"In the chemical transformation of wood, another substance known as crystal urea shows great promise. Green woods, impregnated with urea and dried, become relatively plastic when heated. They may be bent, twisted, and compressed. They retain their new shapes, resuming their normal rigidity, and hardness when cool.

"Plywood adhesives perfected for the aviation industry will be available after the war in great quantities. Thin sheets of "veneer" or ply, bonded with these new "glues" can be bent or molded into practically any shape desired. Plywood furniture, bathtubs, light walls and movable partitions as strong per unit of weight as steel will go far toward making possible the inexpensive and durable house of tomorrow."

FILL TIRES WITH SOLUTION FOR LONGER LIFE

Longer tractor tire life and better service are assured in a new method of farm tire care—Solution "100" which was made available by the Goodyear Tire & Rubber Company. The method is adapted exclusively to tires which use inner tubes and to tires used only at low speeds.

The Solution "100" method, which means filling each tractor-tire tube to 100 percent of its capacity with water or calcium chloride solution, results in greatly

(Continued on page 233)

(Continued from page 232)

increased traction, longer tread life and increased drawbar pull, according to Goodyear.

In addition to maintenance of constant, even pressures Solution "100" tires also means less bounce, creating a smoother ride for the tractor operators. In filling a tire to 100 per cent of its capacity, the valve core is removed from the valve and the tube filled to 25 percent of its capacity with the solution. The tube is installed next in the casing and both are placed on the rim, after which regular solution-filling equipment is attached to the tube and it is filled to capacity.

HISTORY OF PIPING

Interesting history of the development of piping beginning with the hollow log developments of the troglodyte, on through the piping from the Pyramids to the Nile, stone and lead developments by the Carthagenians, Greeks, Romans, the first appearance of cast iron piping, and the gas light era down to the present and welded piping, appears in the Spring 1943 issue of "Sparks," published by Tube Turns, Louisville, Ky. Copy may be had for the asking.

DEVELOP NEW PLASTIC TUBING

Plastic tubing with all the flexibility of rubber has been announced by the Goodyear Tire & Rubber Co., Akron. Tests are said to have shown that it has practically the same resistance as rubber tubing to extremes of temperature. In addition, it will resist pressures up to 40 lbs. per inch when unbraided— approximately the same strength as rubber tubing—and up to more than 200 lbs. per square inch when braided. Unbraided it is transparent, disclosing readily any obstructions which may occur. It also can be produced in opaque or colors. It is produced with materials far lower on the critical list than rubber, thus making it available for a wide range of purposes for which manufacture of rubber is now prohibited. It can be produced in the same range of sizes as rubber tubing before the war.

STANDARD FIREPROOFING SPECIFICATIONS FORECAST NEW WOOD INDUSTRY

Development of a national wood fireproofing industry is foreseen as the result of a recent move by the government to replace steel and make large quantities of fire-resistant lumber available for the safeguarding of war construction.

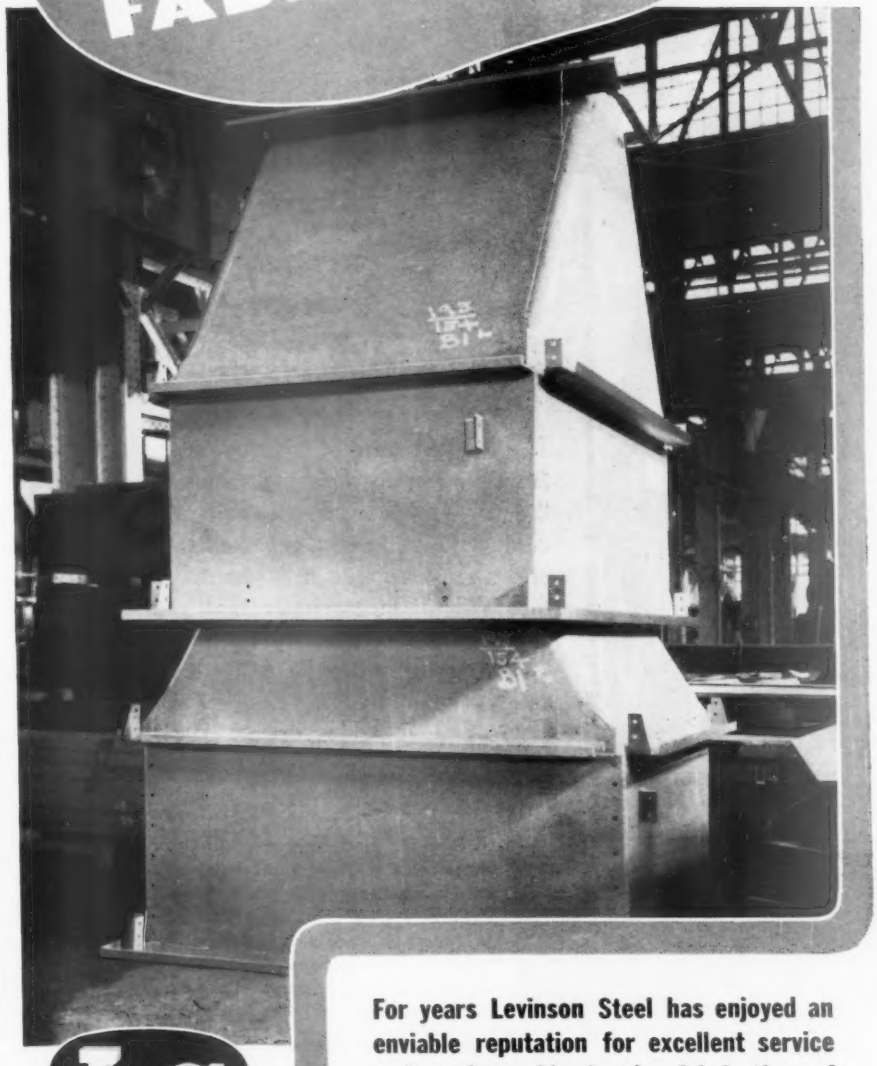
Spurred by the war program and helped by the establishment of federal specifications for fire-retardant chemicals and processes, the capacity of the wood-preserving industry to produce fire-resistant lumber has been stepped up to an estimated 250,000,000 board feet annually.

According to J. F. Linthicum, Chicago, president of American Lumber and Treating Company, the federal specifications

(Continued on page 234)

LEVINSON

Special STEEL FABRICATION



LS LEVINSON STEEL

For years Levinson Steel has enjoyed an enviable reputation for excellent service and workmanship in the fabrication of structural steel. Another important phase of Levinson Steel service is the fabrication of steel for heat-treating furnaces and for other special war production equipment.

The LEVINSON STEEL Company

Fabricators of Structural and Miscellaneous Steel

33 PRIDE STREET · PITTSBURGH, PA.

When writing Levinson Steel please mention Purchasing

TODAY . . .
a job speeded up is
A job well done . . .

Backstand Idlers *using*

3-M ABRASIVE BELTS and SEGMENT FACE CONTACT WHEELS

This 3-M Method of grinding and finishing is helping many finishing rooms out of a "jam." 3-M Abrasive Belts have the cutting power to turn out work with speed and when used with a Segment Face Contact Wheel, many items that previously could not be finished by this method due to their shape are now being finished on time.

When today's war effort demands so much speed, checking your methods may prove the answer to increased production.

A 3-M Methods Engineer will gladly cooperate with you by surveying your present set-up and suggesting the type of 3-M Abrasive Belt and Segment Face Wheel to increase your production. These men have wide experience and are proving a definite aid to industry. This service does not obligate you.

MINNESOTA MINING & MFG. CO.
Saint Paul, Minnesota

OTHER 3-M PRODUCTS AIDING WAR PRODUCTION
- 3-M Abrasive Paper and Cloth Products.
- "SCOTCH" Tapes.
- 3-M Adhesives.
- 3-M Wax and Sealer.
- 3-M Lapping and Grinding Compounds.
- 3-M Cutting and Finishing Compounds.
- 3-M Fibre Gaskets.

Gentlemen: P 543
Kindly send your booklet "3-M Method of Polishing and Finishing."
Company.....
Address.....
City..... State.....
Signed.....

Branch Offices BOSTON - BUFFALO - CHICAGO - CINCINNATI
DETROIT - HIGH POINT - LOS ANGELES - NEW YORK - PHILADELPHIA
SAINT LOUIS - SAN FRANCISCO - SEATTLE

(Continued from page 233)

for the first time can bring fireproofed lumber out of the laboratory and into wide commercial application. Before the government's action, most wood preservers had declined to enter the field because of the existence of unstandardized specifications.

Fireproofing agents outlined by the federal specifications are chiefly compounds of ammonium and boron. These compounds do not give off toxic fumes during fire-exposure, do not affect strength and color of wood, are noncorrosive to metal fastenings, and have no serious effect on paint and glue. Each compound going into a fire-retardant formula is selected for its ability to perform particular functions; for example, to prevent flame-spread, or to prevent after-glow (or both). As a result, fire resistance is accomplished by the chemicals working as a team.

PROTECTION FOR WAR PLANTS

A program for protecting war production plants against the "four horsemen" of industrial destruction—fire, accident, sabotage and air raid—has been announced by James M. Landis, Director of Civilian Defense.

OCD is responsible for development of protection programs for all plants and facilities not owned or operated by the Government or assigned to the responsibility of the War or Navy Departments.

Wholehearted cooperation of both Management and Labor in a program is assured, Mr Landis said, by the membership of OCD's recently-formed Industrial Protection Council, composed of representatives of eight major groups of Labor and Management.

The industrial protection program of the OCD is under the direction of Major General U. S. Grant, 3rd.

SPEEDS CHROMIUM PLATING

Landing gear struts for airplanes are chromium plated twice as fast by using a tube of Lucite methyl methacrylate resin to protect the treated end during plating, according to the Plastics Department of the E. I. du Pont de Nemours Company. It is said to be more durable than any previously tried protecting or insulating material in chromium electroplating baths. Electroplaters who have used Lucite to insulate the positive and negative anodes in their chromic acid baths report that it stands up indefinitely in the acid, and retains its shape. Rubber, lacquered wood, certain phenol-formaldehyde plastics and other materials deteriorate or contaminate the solution. Plastic insulators are now used in the electro-deposition of chromium on steel, brass and bronze parts for military equipment.

L. FRED IVERSON

L. Fred Iverson, 71, purchasing agent of the Sealed Power Corporation, Muskegon, Mich., passed away at his home recently. He joined the company in 1916, becoming purchasing agent in 1935.

Call us

for GENERAL PURPOSE STEELS

Steel products, tools, machinery and equipment

Like yours, our first job is to speed war production. So, if your production on a war job is in danger of being slowed down for want of some piece of steel—call our nearest warehouse. Many such calls have kept wheels turning.

Although our stocks are not what we wish they were, what we have can be yours—in a hurry—subject, of course, to priority restrictions.

If we don't have what you need, we'll do everything we can to help you find a source of supply. So try us—note our phone and teletype numbers below, at the left.

for NATIONAL EMERGENCY ALLOY STEELS

These new alloy steels were developed as substitutes for the old style alloy steels to save critical materials such as nickel and chromium. They cover a wide range of properties—were especially designed to meet present conditions. In fact, many "NE" steels are actually out-performing the steels previously used.

We welcome your inquiries and will gladly assist you in determining the grades best suited to your needs. Telephone, write or wire the warehouse nearest you.

for AIRPLANE MATERIALS

Our Chicago Warehouse has been designated by the War Production Board as a warehouse to distribute the following aircraft products:

WD-X-4130 Sheets, *Open Hearth, Normalized, Pickled and Oiled to Spec. AN-QQ-S-685, Condition N. All gauges .016 to .50 sheets 18 x 72".*

Stainless Steel Rounds, *Spec. AN-QQ-S-771.*

Stainless Sheets—*Spec. AN-QQ-S-772. Spec. AN-QQ-S-757.*

These materials are for use in airplanes and available at our Chicago Warehouse only. If you are eligible for these materials, phone, write or wire: United States Steel Supply Company, P. O. Box MM, Chicago, Ill. Telephone, BRUnswick 2000—Teletype CG. 605.

UNITED STATES STEEL SUPPLY COMPANY

USS STEELS SERVICE

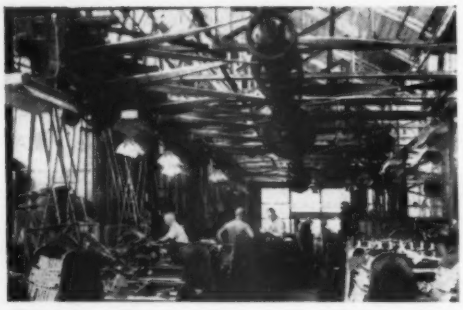
CHICAGO,	1319 Wabansia Ave., P. O. Box MM	BRUnswick 2000 *Teletype CG. 605*
BALTIMORE,	Bush & Wicomico Sts.,	GILmore 3100
BOSTON,	176 Lincoln St., Allston, P. O. Box 42	STAdium 9400 *Teletype BRTN. 10*
CLEVELAND,	1394 E. 39th St.,	HEnderson 5750 *Teletype CV. 153*
NEWARK, N.J.,	Foot of Bessemer St., P. O. Box 479 *Teletype NK. 74*	BIgelow 3-5920 REctor 2-6560 BErgen 3-1614
PITTSBURGH,	1281 Reedsdale St., N.S.,	CEdar 7780 *Teletype PG. 475*
ST. LOUIS,	21st & Gratiot Sts.,	MAin 5235 *Teletype SL. 384*
TWIN CITY,	2545 University Ave. St. Paul, Minn.	NEstor 2821 *Teletype STP. 154*

UNITED STATES STEEL SUPPLY COMPANY

(formerly Scully Steel Products Company)

UNITED STATES STEEL

LONG SERVICE—LOW MAINTENANCE



TANNATE Leather Belts outpull and outlast ordinary belts . . . grip tight . . . run smoothly . . . keep machines at constant high speed . . . with little care other than an occasional application of Rhoads Belt Preserver! TANNATE resists high temperatures, water, machine oils and many chemicals.

MORE PRODUCTION WITHOUT MORE MACHINES, with

TANNATE keeps machines running at top speeds even under varying load conditions. It delivers maximum power — gets extra production from almost any plant. Wherever you want more output, more uniform work, less spoilage, fewer shutdowns and reduced unit costs — specify TANNATE!

RHOADS Tannate WATERSHED LEATHER BELTING

J. E. RHOADS & SONS • Established 1702
35 NORTH SIXTH STREET, PHILADELPHIA, PA.
NEW YORK • CHICAGO • ATLANTA • CLEVELAND

Here—Millions of BOLTS-NUTS-SCREWS for Defense—

These are the products you can use on production job after production job with the assurance that General Screw Manufacturing Company products will help you standardize, with uniformity, for economy and speed in production.

GENERAL SCREW MANUFACTURING CO.
1234 W. MONROE ST. CHICAGO, ILL.

INFORMATION for Purchasing Agents on STAINLESS WELDING FITTINGS

Pittsburgh Piping Stainless Welding Elbows simplify piping fabrication and save valuable time. Made in 90° and 45° styles in Stainless Type Nos. 308, 316, 317, and 347. Sizes ¾" to 8". Bulletin S-306 describes the complete line.

Write for your copy.

Write for your copy

PITTSBURGH PIPING & EQUIPMENT CO. 10 FORTY-THIRD ST., PITTSBURGH, PA.

FIRST-HAND STORY ON RUSSIA AT NEW YORK MEETING

John Scott, an American, who spent several years in Russia in the steel and chemicals industries, served as news correspondent in Moscow, and was expelled because his dispatches contained more facts than the Soviet censors cared to have published, was the principal speaker at the April 20 dinner meeting of the Purchasing Agents Association of New York. His subject was "What We Can Expect of Russia," in the course of which he reviewed Russia's social and economic development. Speaking of Hitler's attack on Russia he stated that the reasons therefor could be best determined by psychiatrists.

New members introduced at the meeting brought the total membership of the association to 452. In addition, 12 new applications were announced. The afternoon forum was on food rationing for institutions.

SCHOOL SUPPLIES BILL SHELVED

Proposal to transfer the purchase of school supplies from the Board of Education and the Board of Higher Education to the New York City Department of Purchase was recently rejected by the City Council, which approved a recommendation of its committee on state legislation that bill in the State Legislature to carry out the proposed transfer of authority be shelved. The transfer was recommended by the Commissioner of Investigation, who estimated that the change would save the city $500,000 a year. School board officials opposed the transfer on the contention that school authorities were as capable of effecting economies as the Department of Purchases.

START PRODUCTION ON 100,000,000 LBS. OF CORN STARCH ANNUALLY

The National Starch Products company recently started the operation of its reconstructed Indianapolis plant, which will produce an additional 100,000,000 lbs. of corn starch annually for the war effort. From this source of raw material will be processed the major portion of adhesives, dextrines, and starch derivatives produced by National's Adhesives Division for the packaging and wrapping of war supplies and lend-lease materials, as well as products for domestic consumption. The informal opening ceremonies were attended by Governor Henry F. Schricker and high ranking army and navy officers, and others.

KREBS ABSORBED BY DU PONT

The Krebs Pigment & Color Corp., a wholly-owned subsidiary of E. I. du Pont de Nemours & Co., Inc., for the past eight years, was dissolved and its assets and business transferred to the company's Pigments Department. This change of name involves no change in the personnel of the sales, manufacturing or research organization, nor will there be any change in the management or policies. The same organization will continue to serve users of its products as heretofore.

Products for BATTLEFRONTS ALL OVER THE WORLD

Thirty-two years' engineering and manufacturing experience enables Auto-Lite to make important contributions to the war effort. This engineering "know-how" and productive capacity are being used by an increasing number of manufacturers who are contributing to an American victory with every facility at their command.

An Auto-Lite Division was one of the first to receive the coveted Army-Navy "E." Auto-Lite units which are being used on battlefronts all over the world include:

STARTING, LIGHTING AND IGNITION • SPARK PLUGS • BATTERIES • RELAYS • SWITCHES AND GOVERNORS
FIRING CONTROL APPARATUS • FUSES • ETCHED, EMBOSSED AND LITHOGRAPHED NAMEPLATES
GENERATORS • HORNS AND SIGNAL DEVICES • METAL STAMPINGS • INSTRUMENTS AND GAUGES
PROJECTILES • REGULATORS • STEEL CARTRIDGE CASES • ALUMINUM AND ZINC DIE CASTINGS
WIRE AND CABLE • MESS KITS • GUN FIRING SOLENOIDS • BLACKOUT LIGHTING • IRON CASTINGS
BOOSTERS • PLASTIC PRODUCTS • LEATHER GOODS • FRACTIONAL HORSEPOWER MOTORS
GUN FEED MECHANISMS • ARMOR PLATE • TRACER AND IGNITER SHELLS • GUN SIGHT CASES

And confidential items which we are not allowed to name

TOLEDO, OHIO **THE ELECTRIC AUTO-LITE COMPANY** SARNIA, ONTARIO

AUTO-LITE

IN ITS 26 GREAT MANUFACTURING DIVISIONS, AUTO-LITE IS PRODUCING A LONG LIST OF ITEMS FOR AMERICA'S ARMED FORCES ON LAND, SEA AND IN THE AIR

When writing The Electric Auto-Lite Company please mention Purchasing

ARE YOU USING THE RIGHT SAW?

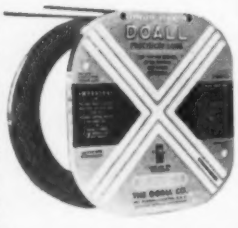
● The new DoAll Saw Clinic takes on any sawing problem, analyzes it, finds out not only the right saw to use, but the best way to handle it, speed, coolant, etc. and gives you a detailed laboratory report.

Built for You — The Clinic is your clearing house for metal cutting jobs you want done better and faster. It's like having a laboratory in your own shop.

Up to the Minute — Equipped with the most modern apparatus, including a photo-microscope to show instantly the grain structure of metals, alloys, plymetals, castings, hard rubber, etc.

Expert Service — Manned by top ranking metallurgists and research engineers. They know their job. They can help you with yours. All at your disposal — all without charge. Send in your tough job now, and we'll put it through promptly and send you results.

DOALL *Band Saws*



It's the extra-hardened teeth that make DoAll Saws the choice when it comes to smooth, rapid metal cutting. They slide through any kind of hard or soft material with the ease of a sharp knife slicing cheese — produce the kind of finish you can be proud of, with worthwhile savings of man hours, energy and material.

Made in tempers, widths and styles to saw anything sawable. 100 feet in each Strip-out Container.

FREE SAW BOOK — Tabloid form for quick, easy reading; includes case histories of difficult jobs. Send for copy today.

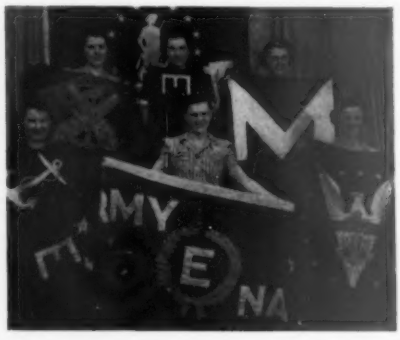
THE DOALL COMPANY
1214 THACKER STREET DES PLAINES, ILLINOIS

DoAll Offices in 25 cities, each in charge of a trained sales engineer to give you quick service Don Band Saws and Files, DoAll Contour Machines, DoAll Gage Blocks and DoAll Surface Grinders.

Recent Production Merit Awards to Industry

More than 10,000 men and women workers of the Bridgeport Works of the General Electric Co., assembled in an outdoor mass meeting to receive the Army-Navy "E" Award, solemnly repeated the following pledge to the men in the armed forces: "I will never let you down. My life is in your hands. Your life is in my hands. I will work to make the best and most of the things you must have to win —that we both may live—that our country may live—that Freedom for all may live". Governor of Connecticut Raymond E. Baldwin addressed the meeting. Dr. Wei Taoming, Chinese Ambassador to the United States was the principal speaker at a dinner memorial, which was also addressed by Gerard Swope, president of the General Electric Company.

The Erie Works of General Electric, already the possessor of every production award bestowed by the government, has just been awarded the Army-Navy "E" pennant with three stars. The accompanying illustration shows six sisters employed in the plant holding the various flags, with the Treasury Department's "Minute Man" flag on the wall.



Six Stefanowicz sisters in G. E.'s Erie Works display merit flags awarded the plant and its employees

The Storage Battery Division of the Philco Corp., Trenton, N. J., has been awarded a white star to add to its Army-Navy "E" flag, for continuing excellence of its war production. Brief ceremonies marking the additon of the star were held at the plant on April 16.

Willamette Hyster Company. The men and women of the Peoria (Ill.) plant of this company which has headquarters in Portland, Ore., have been awarded the "E" flag and "E" pins. Gail Spain, vice president of the Caterpillar Tractor Co. presided at the presentation program.

The Fairfield Manufacturing Company, Lafayette, Ind., is now among the recipients of the coveted Army-Navy "E" Award, the presentation being made April 5 by Major E. W. Harrison of the Cincinnati Ordnance District.

Foote Bros. Gear and Machine Corporation and its employees are also among the proud recipients of the "E" Burgee. Rear Admiral Clark H. Woodward presented the Army-Navy pennant to President Wm. A. Barr, and Colonel Wm. A. McCarty presented token "E" pins to the employees.

(Continued on page 240)

UNUSED CAPACITY

means Wasted Man-Hours*

You want *full* capacity—more miles-per-gallon from your gasoline, more BTU's from each ton of fuel, more *work-per-stroke* from your files. "Unused Capacity" drags production sends up costs and wastes man-hours.

*Delta Files will do on the average 25% more work in the same amount of time, with the same effort—*proved* by actual scientific tests.

Ask your industrial distributor to show you Delta Files. Your men will notice the difference.

DELTA FILE WORKS
Philadelphia, Pa.

DELTA

DELTA FILES

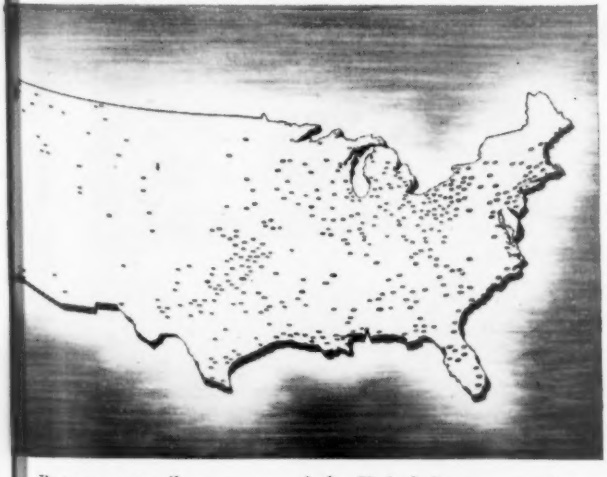
OVER 38! BUT RECALLED TO SERVICE

VALVES today, like men, cannot be retired because of age. This veteran valve has seen service for 38 years, but a thorough cleaning — repair of its vital parts, and it will be ready to go back into service.

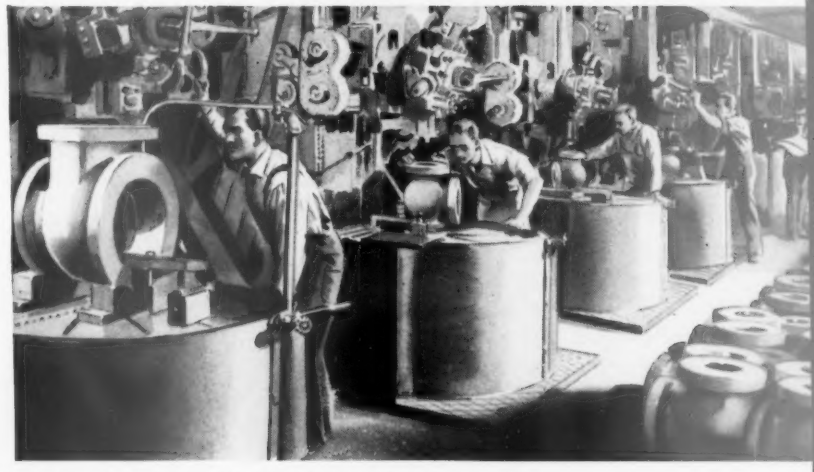
Keeping valves in repair is not a difficult job and is a contribution every manufacturer can make toward winning the war. Valves are so vital to our Navy and our Army—to production of steel and production of oil—to the new ordnance plants and the new synthetic rubber plants—in fact to every phase of war production that making every valve in your plant, new or old, give its full service is a victory "must."

To aid you in getting the proper valve for the right job—to show how substitutions can solve shortages—to aid your maintenance men by refreshing their memories on short cuts in valve repair—to aid you in training new men on valve maintenance, we have prepared a series of Piping Pointer Bulletins. They contain simple, practical, down-to-earth information on the selection and care of valves. They will be furnished to any manufacturing plant faced with piping problems without charge.

Crane Co., 836 S. Michigan Avenue, Chicago, Ill.



Put your pencil on a map of the United States—anywhere—and you'll find that you're not far from a Crane Branch or a Crane Distributor. This far-flung organization is ready at all times to furnish service to manufacturers faced with flow control problems.

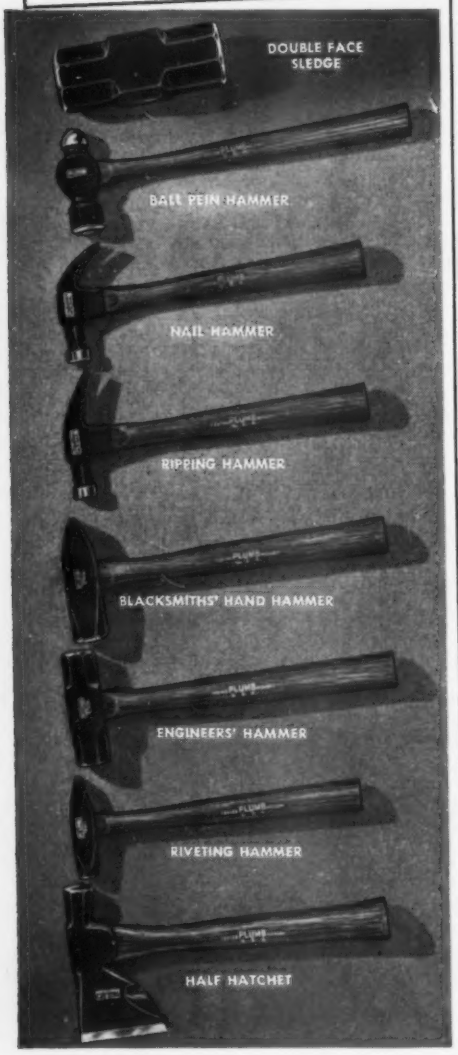


In the giant Crane Chicago Works which is operating on a 24-hour-a-day—7-day-a-week schedule 15,000 workers are producing valves for victory. Crane, America's largest valve manufacturer, has doubled and redoubled its valve production—an effort that won management and workers the Army-Navy "E".

ARMY E NAVY

CRANE *FLOW* CONTROL
THROUGH CRANE VALVES

PREFERRED BY PRIORITY BUYERS



Quality is Paramount! You know that the tools you buy today must LAST. You know that quality (which means better performance and longer life) is required. There are no finer or safer tools than Plumb Tools! Tested steel heads, perfected balance, sturdy hickory handles shaped to the hand combine to give you striking, pulling, cutting tools that have been preferred for decades. It is doubly important today that you specify PLUMB Tools to your mill supply salesman.

FAYETTE R. PLUMB, Inc. • PHILADELPHIA, PENNA.

PLUMB

HAMMERS • HATCHETS • AXES • SLEDGES

(Continued from page 238)

The Solar Manufacturing Corp., Bayonne, N. J., was awarded the Army-Navy "E" at appropriate ceremonies in which Army, Navy, state and civic officials joined with the management and employees.

Westinghouse Electric & Manufacturing Co. Hoisting of the Army-Navy burgee with star over the East Pittsburgh plant was the first of three ceremonies in the company's East Pittsburgh Division. Similar programs were arranged at the Nuttall Gearing Department in Pittsburgh and the Derry Porcelain Department. "E" renewals have been awarded recently to four Westinghouse plants outside the Pittsburgh district. They are the Transformer Division at Sharon, Pa., the Steam Division at South Philadelphia, the Phila. Manufacturng and Repair plant, and the Newark Mfg. and Repair Plant.

Clark Tructractor Div. of Clark Equipment Co., Battle Creek, Mich., held fitting ceremonies on the occasion of the presentation of the Army-Navy "E" award. The army was represented by Col. Ross, Chief of Transportation, European Theater of Operations, who was on a brief visit to the United States. The Navy was represented by Lt. Comm. Hugh B. Masters, U.S.C.G.R, Commanding Officer, Coast Guard Training Station, Battle Creek. Edgar A. Guest, well known poet, was master of ceremonies.

B. F. Goodrich Co. The Niagara Falls, N. Y. Koroseal Division has been awarded the Army-Navy "E". John L. Collyer, president of the Goodrich Company received the award from Lieut. Commander E. F. Heckman, U. S. Navy.

Edward Valve & Manufacturing Co. The United States Maritime Commisson's Maritime "M" pennant, Victory Fleet flag and labor merit badges were presented to employees of The Edward Valve & Mfg. Co., Inc., East Chicago, Ind. Governor Henry F. Schricker of Indiana and Rear Admiral Edward E. Evers, U.S.N., were among the principal speakers.

President W. F. Crawford of Edward Valve & Mfg. Co. is presented with "M" burgee

Pittsburgh Steel Co. In separate ceremonies, Army-Navy "E" recognition was granted to both the Allenport and Monessen, Pa. plants of the Pittsburgh Steel

(Continued on page 242)

☒ METAL SPINNING
☒ DEEP DRAWN STAMPINGS
☒ METAL STAMPING
☒ POWER BRAKE WORK
☒ WELDING
☒ METAL FINISHING

AMPLE FACILITIES
For LARGE or Small Scale
WAR TIME PRODUCTION

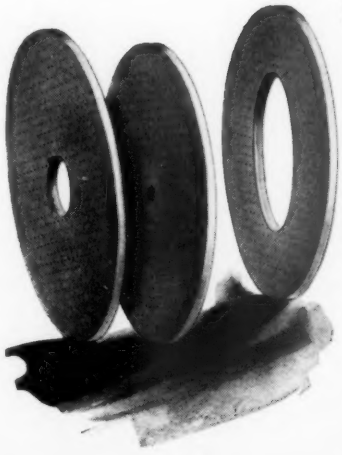
Spinnings up to 85" diameter!
Stampings up to 350 ton pressure!
Up to 16" stroke!
Send blueprints or phone for representative

COMMERCIAL METAL PRODUCTS CO.
2257 W. St. Paul Ave. CHICAGO, ILL. Phone ARMitage 1123

This Merry-go-round has gone to war!

1. It takes a lot of parts to make a Jeep. And this "merry-go-round" has the job of grinding some of those parts (those with flat surfaces)...in a hurry! By rotating a large number of pieces beneath a Carborundum made disc wheel, it surface grinds them in a fraction of the time required by older methods. This process is one which Carborundum helped develop.

2. Surface ground parts for jeeps, tanks and other weapons just couldn't be finished one at a time; production would be hopelessly low. The introduction of disc wheels and the "merry-go-round" surface grinder put surface grinding on a real mass production basis. The method can be used to generate flat surfaces to precision tolerances, on smallest pieces or on massive forgings and castings. It speeds production of many vital war items from valve springs to connecting rods, from piston rings to clutch plates!



3. Careful supervision of grinding operations is vital today to conserve materials and time. The abrasive disc wheel is a "Weapon of Production" and should be properly used for maximum effectiveness. The Carborundum Company, Niagara Falls, N. Y.

CARBORUNDUM
REG. U.S. PAT. OFF. BRAND
ABRASIVE PRODUCTS

Carborundum is a registered trade-mark of and indicates manufacture by The Carborundum Company.

All
SMALL PARTS YOU NEED FROM THIS Single SOURCE

Centralize your sources and SAVE TIME. Above diagrams typify the variety of Fuse Pins and Discs — Shear Pins — Retaining Pins — Setting Pins — Firing Pins — Swivel Locks — Threaded Hooks — Wing Nuts — U-Bolts — special and standard Screws, Bolts, Nuts and Rivets obtainable at Central Screw Company for:

- Communication Units
- Hose Clamps
- Electrical Controls
- Bomb Releases
- Aircraft Components
- Ordnance Items
- Ammunition Boxes
- Marine Equipment

SPEED YOUR PRODUCTION!

If you need small parts for Bombs — Bomb Releases — Fuses — Ammunition Boxes — Communication Units — Electrical Controls — Aircraft Components — Hose Clamps — Ordnance Items — Marine Equipment — we'll deliver *any* quantity, with absolute *uniformity* of size, shape, and quality, *when* you need them. Write

CENTRAL SCREW COMPANY
3515 Shields Ave. Chicago, Ill.

(Continued from page 240)

Company. Officers of the Army and Navy, officials of the company and thousands of employees participated in the ceremonies.

The Stanley Works. The Army-Navy "E" award was presented to Stanley Tools Division and Stanley Electric Tools Division, The Stanley Works, New Britain Conn. The presentation ceremony was held in the shipping room of the New Britain plant which was converted into an auditorium for the event. Lucius M. Knouse, general manager of Stanley Electric Tools and vice president of the Stanley Works acted as master of ceremonies. This Stanley "E" award was the sixth Army-Navy "E" Award to be officially conferred on New Britain plants. The parent organization received the award January 20, and another Stanley division, the American Tube and Stamping Plant, Bridgeport, Conn., received the award March 18.

The Philadelphia plant of the Container Corporation of America, Chicago, Ill., has been awarded the Army-Navy "E" flag, according to announcement by President Walter P. Paepcke, who states that "As far as we know, this is the first "E" award thus far made in the shipping container and folding cartoon industry."

The Kropp Forge Co., Chicago, has been formally presented with the second white star for its Army-Navy "E" Flag. In accepting the second star, President Roy A. Kropp announced another co-incident important ceremony—the dedication of the Kropp Forge Aviation Company's new plant.

CYLINDER FORGING RECORD

Employees of Tube Turns, Louisville, Ky., were recently honored for setting the one-month world's record of cylinder production, taking the palm from Pennsylvania and Ohio workers who were the

Tube Turns employees display award for record cylinder production

former title holders. Kentucky's Governor Keen Johnson and Major Willard C. Worcester of the Army Air Force presented the employees with the large shield illustrated, the panels of which are red, blue and green, representing the plant's three around the clock shifts. The production record was made on the larger cylinder barrels used on Flying Fortresses. The picture shows Major Willard C. Worcester of the Army Air Force, Billy Smith, assistant foreman of the Red Crew, and Governor Keen Johnson of Kentucky.

High Speed Production Methods demand a Caster that can stand punishment -- for dependability and safety specify

DARNELL CASTERS & WHEELS

Darnell Corp., Ltd.
LONG BEACH, CALIFORNIA
36 N. CLINTON ST., CHICAGO
60 WALKER ST., NEW YORK CITY

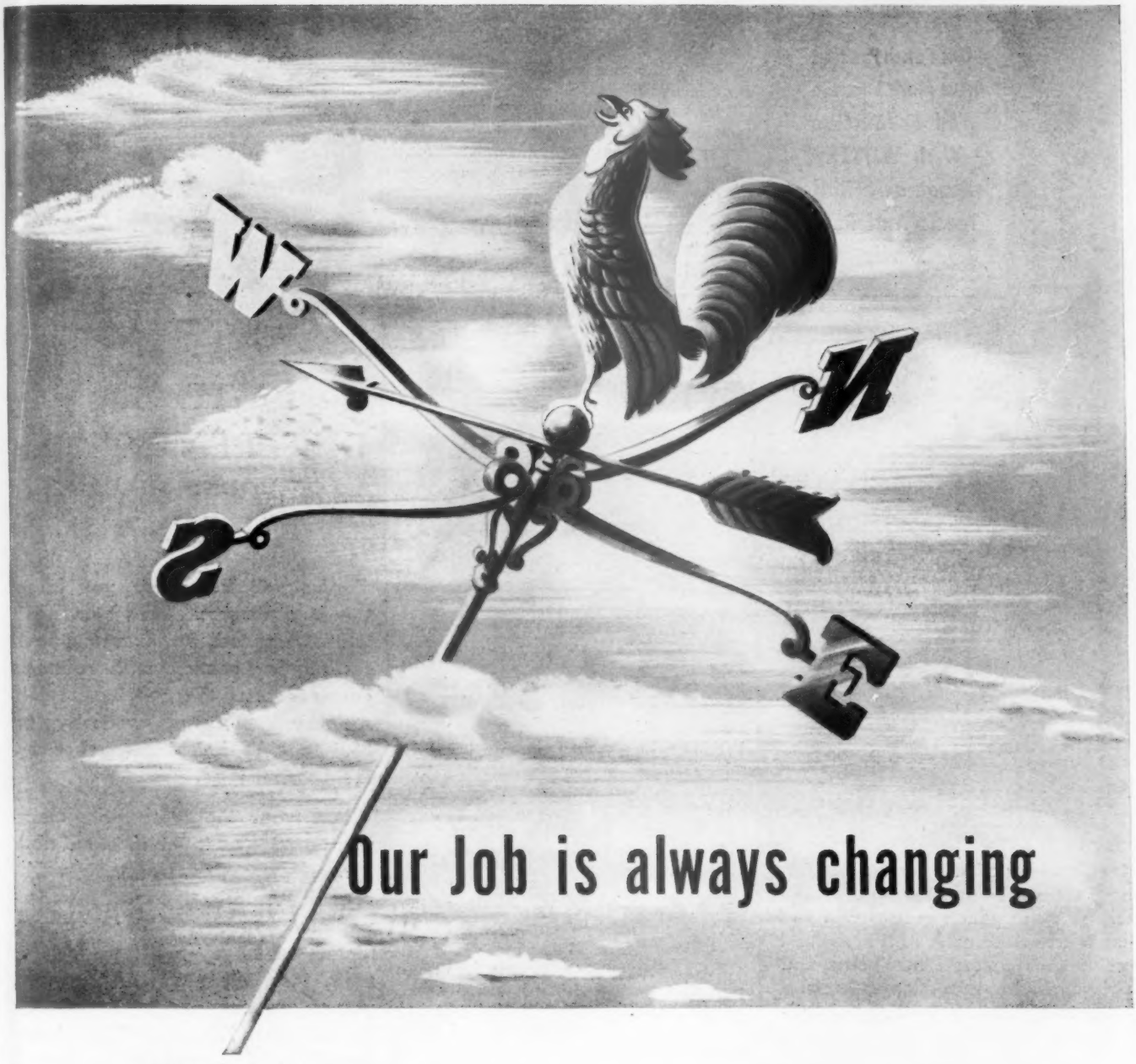
HOTEL PHILADELPHIAN
FORMERLY HOTEL PENNSYLVANIA
DANIEL CRAWFORD, JR., Mgr.
39th and CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA

Our courteous and competent staff will give you the utmost in friendliness, comfort and service. Conveniently located to all stations, and only five minutes away from the heart of the business section.

600 ROOMS
Each with bath from $3.00 up

RADIO IN EVERY ROOM

Lounge and Restaurants
Unrestricted Parking to 3 a.m.



Our Job is always changing

NO TWO YEARS are ever quite alike in our experience.

Always something new coming into the picture; and we, too, are continually developing new ways of doing things.

Right now, of course, we are producing all out for Victory.

When we are through with that big job, it will be a changed world we shall go back to.

But one thing will not be changed.

That is the appreciation on the part of manufacturers of the kind of service that advanced General Industries to a leading position in the industry,—the ability to produce molded plastics parts in any quantity, accurate, finely finished and always "On Time."

General Industries

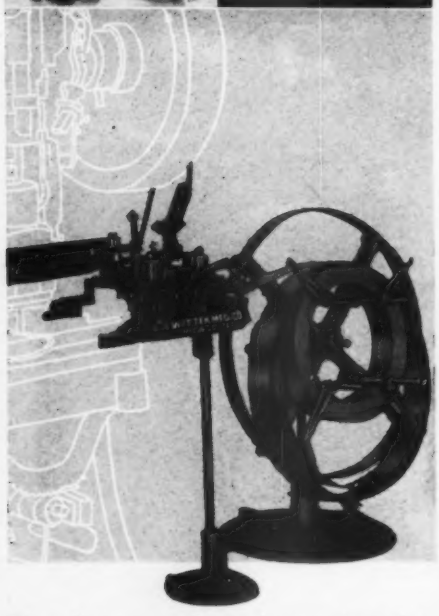
MOLDED PLASTICS

THE GENERAL INDUSTRIES CO.

Molded Plastics Division • Elyria, Ohio

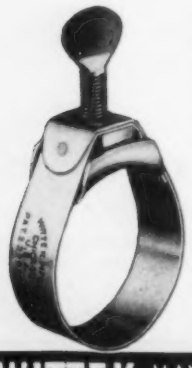
Chicago: Phone Central 8431 New York: Phone Longacre 5-4107
Detroit: Phone Madison 2146 Milwaukee: Phone Daly 4057
Philadelphia: Phone Camden 2215

When writing The General Industries Co. please mention Purchasing



Manufacturers of metal stampings facing problems in the feeding of coiled strip stock to punch presses will find that Wittek Automatic Roll Feeds and Reel Stands conserve man-hours and achieve new high production levels.

Providing an improved and simplified method of punch press operation, Wittek Automatic Roll Feeds and Reel Stands insure rapid, safe and accurate feeding under all conditions. Made in four different types to meet all automatic feeding requirements. Write for complete details. Wittek Manufacturing Co., 4305-15 West 24th Place, Chicago, Ill.



Wittek Hose Clamps for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.

ARMY E NAVY

WITTEK MANUFACTURING CO.
4305-15 W. 24th Pl., Chicago

AMONG THE PEOPLE YOU BUY FROM

Keith Powlison has been elected vice president and controller of the Armstrong Cork Co., Lancaster, Pa. M. J. Warnock succeeds Mr. Powlison as treasurer. Cameron Hawley has been appointed director of advertising and promotion, succeeding Mr. Warnock.

C. J. Bickler, formerly sales manager of the Cleveland District, Globe Steel Tubes Co., Milwaukee, Wis., has been appointed assistant to the vice president, sales, with office at Milwaukee.

Helge G. Hoglund, has been made vice president of the Van Norman Machine Tool Co., according to announcement by

President James Y. Scott. He has been sales manager of the machine tool division for the past ten years, and will continue in charge of sales of the machine tool division. In addition he will have control of sales of the company's new electronics division.

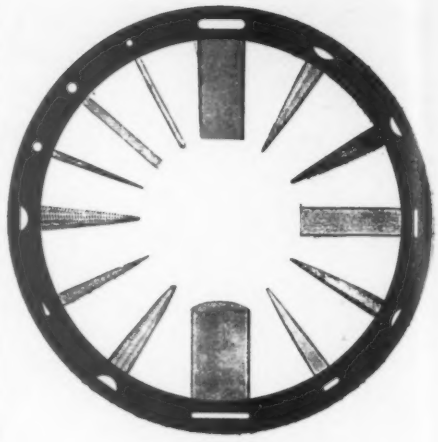
H. L. Trembicki is manager of the newly organized wire coating division of the Magnus Chemical Co., Inc., Garwood, N. J. He developed the process for drawing wire without the use of lime, and will specialize in this service which will be extended to include deep drawing of steel and other metals.

C. W. Higbee has been made manager

of the newly organized wire and cable department of United States Rubber Company.

Arthur E. Schnell, general superintendent, Aluminum Industries, Inc., Cincinnati, Ohio, has been honored with a U. S.

(Continued on page 246)



WHY 13 DIFFERENT TYPES OF ROUND-SURFACE FILES?

Confusing? Not when you know the kind of work for which each is best adapted. For example, each rectangular section with rounded edges is suited to a specific service, ranging from coarse work by the Mill type to finishing touches by the Crochet type.

When your tool and die makers want advice as to the most suitable Swiss-Pattern Files for their work, consult "American Swiss" . . . experienced specialists in the manufacture of these precision tools for more than 40 years. And when you want the most serviceable Swiss-Pattern Files, buy "American-Swiss" . . . widely preferred because of their clean, sharp, long-wearing teeth and uniform hardness.

SEND FOR CATALOG

AMERICAN SWISS FILE & TOOL CO.
ELIZABETH NEW JERSEY

FILES ONLY THE BEST TOOLS

ASK FOR THEM BY THIS NAME

American Swiss

SWISS PATTERN FILES

POWELL has the valves YOU need!

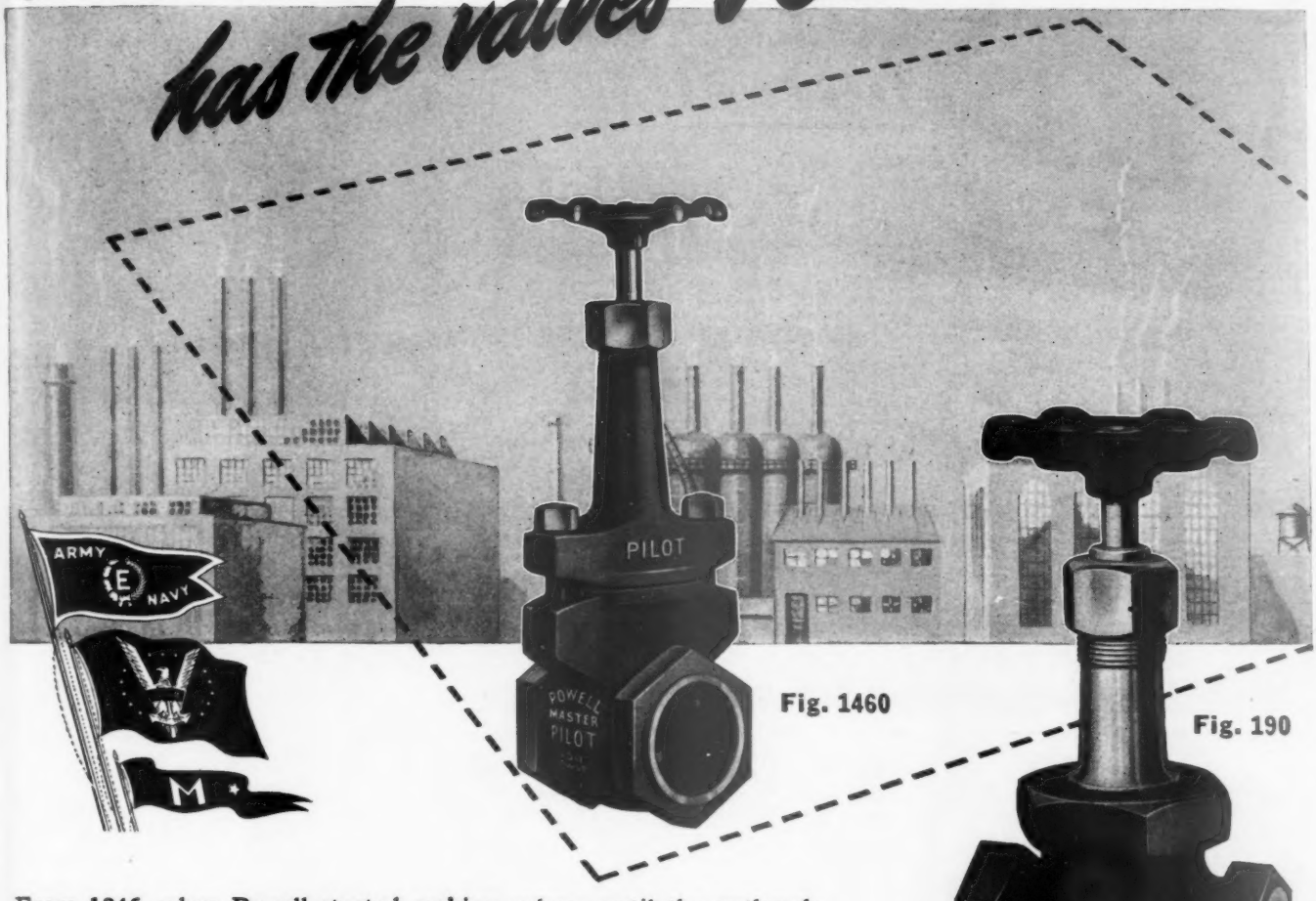
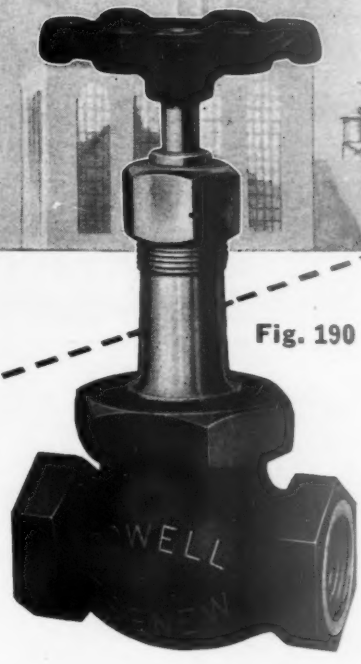


Fig. 1460

Fig. 190



From 1846, when Powell started making valves, until the outbreak of the "Global War", the pace of industrial progress was constantly accelerating. One after another, with ever-increasing rapidity, new products and processes were being evolved. And as each became a reality, Powell was ready with the correct valves.

Since Pearl Harbor the rate of acceleration has reached a peak. And—as in the past—Powell Engineering has been meeting every challenge★. Let us help you with any valve problem you may have—Powell has the valve you need—or we'll design one for you.

★For the contribution we are making toward winning this War, we have been honored with the Army-Navy "E", the Maritime "M" and the Victory Fleet Flag.

Fig. 190—Iron Body Bronze Mounted "Irenew" Globe Valve for 150 pounds W. P. Screwed ends, union bonnet and regrindable, renewable hard bronze plug-type seat and disc.

Fig. 1460—Iron Body Bronze Mounted "Master Pilot" Gate Valve. Screwed ends, bronze rising stem, bolted flanged bonnet and taper wedge bronze solid disc. Sizes ¼" to 2" for 150 pounds W. P.; 2½" to 4" for 125 pounds W. P. Also available in All Iron—Fig. 1462.

The Wm. Powell Company

Dependable Valves Since 1846

Cincinnati, Ohio

POWELL VALVES

When writing The Wm. Powell Company please mention Purchasing

SAFETY NOW and DOLLARS THEN!

KEEP FLOORS CLEAN--BUT *DO IT RIGHT!*

Every accident due to slippery, dirty floors robs the war production effort — whether lost time is slight or large. Clean floors are more vital today than ever before in these days of rushed production, "green" employees and nervous tension. But, the wrong cleaning material and the wrong method not only fail to clean floors properly . . . they also affect the life of your floors.

Here is a technical bulletin on safe floor cleaning methods for every type of floor. Write for your copy *now*.

MAGNUS FLOOR CLEANERS are especially designed for particular types of floors. The methods recommended for their use are based on cleaning for safety *now* and saving dollars *then* by prolonging instead of shortening floor life. It will pay you to study the bulletin illustrated here. It will save men and dollars.

MAGNUS CHEMICAL COMPANY

Manufacturers of Cleaning Materials, Industrial Soaps, Metallic Soaps, Sulfonated Oils, Emulsifying Agents and Metal Working Lubricants.

99 South Avenue **Garwood, N. J.**

Service Representatives In All Principal Cities.

Magnus CLEANERS

RED TYE PARTS BAGS

On the Spot **WHEN NEEDED!**

Make sure that small parts, accessories and replacements are on the spot when needed by putting them in a Chase Red-Tye Parts bag and attaching them right to the product. Avoid irritation and loss of time caused by overlooked or mislaid parts.

Chase Red-Tye Parts bags are available in many types and sizes . . . with or without tags or envelopes attached for letter, invoice or instruction sheet.

Write for samples and prices. Also inquire about Chase Red-Tye mailing bags . . . for the quick, safe delivery of small replacement parts.

CHASE BAG CO.
302 EAST PITTSBURGH AVE., MILWAUKEE, WIS.
ONE OF THIRTEEN GREAT FACTORIES

Hodell CHAINS

WELDLESS and WELDED

157 VARIETIES!

Hodell, in war as in peace, is a specialist in producing chain assemblies with or without attachments—assemblies that cover the widest range of sizes and uses. If your wartime production presents chain problems, let Hodell engineers help you. Send blueprints for estimate.

ESTABLISHED 1886
THE HODELL CHAIN CO.
CLEVELAND, OHIO

(Continued from page 244)

Army citation for important savings in vital war material. As a result of the new method developed by him, a 20% saving in alloy steel is achieved in producing armor piercing shot at Aluminum Industries.

Lt. Col. John Slezak, (president, Turner Brass Works, Sycamore, Ill.) deputy chief of the Chicago Ordnance District,

has been promoted to the rank of Colonel. When Col. Slezak, whose years with the Ordnance Reserve date back to 1924, was called into service, he was given a leave of absence for the duration of the war.

Don G. Mitchell is now vice president in charge of sales, Sylvania Electric Products, Inc.,—a newly created office—Salem, Mass. Robert H. Bishop, formerly eastern sales manager of the Lighting Division, has been named general sales manager of this division with headquarters at 500 Fifth Avenue, New York.

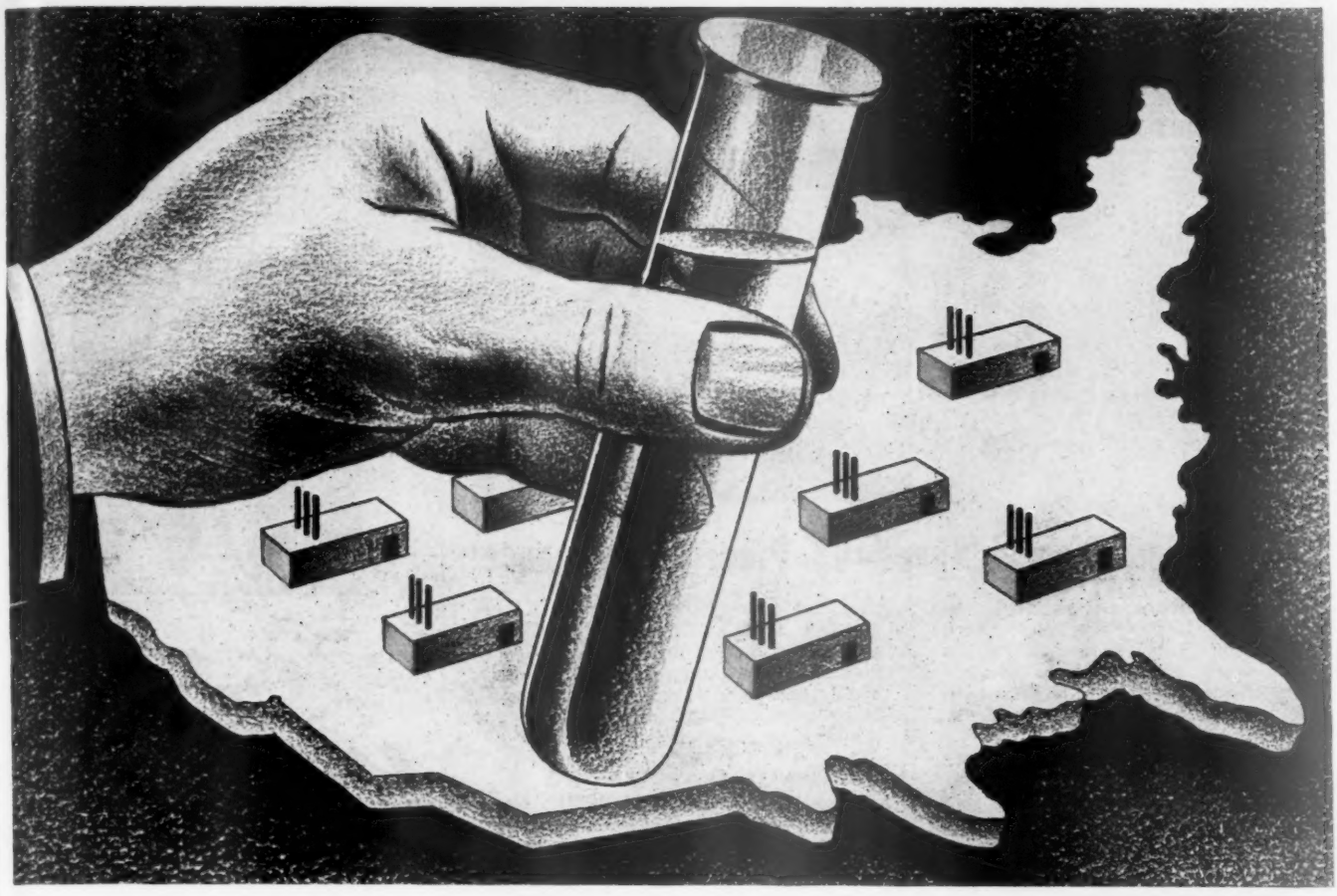
John W. Kaske has been appointed assistant chief stores manager of the Westinghouse Electric Supply Co. In collabora-

tion with J. B. Wiseman, chief stores manager, he will be responsible for supervision of stock inventories in the company's 79 supply houses.

The Manhattan Rubber Mfg. Divn. of Raybestos-Manhattan, Inc., Passaic, N. J., has leased two large farms, which it will plow, harrow and fertilize, and divide into 20 x 40 ft. plots for employee Victory gardens.

Hinde & Dauch Paper Co., Sandusky, Ohio, is sponsoring an educational advertising campaign directed to manufacturers and shippers, on the theme "Protec-

(Continued on page 248)



SCIENTIFIC RESEARCH

Your post-war finishing problems are being solved today in thousands of plants throughout America . . . producing the many thousands of products necessary to the winning of the war . . . with newly developed materials and methods mothered by military necessity. Some of these discoveries are available now. Others . . . now military secrets . . . will be available immediately after the war is won. But for the manufacturer with foresight to plan tomorrow's product today . . . there CAN be no delay. When victory releases demand it will be too late for research. Waiting customers will demand production. NOW is the time to act . . . for today's planning will determine the success or failure of tomorrow's production. Your inquiry will incur no obligation. Address The Stanley Chemical Company, East Berlin, Connecticut.

Stanley Chemical

When writing The Stanley Chemical Company please mention Purchasing

OAKITE WARTIME SERVICE IS AVAILABLE WITHOUT CHARGE
TO ANY PLANT WORKING ON WAR ORDERS
Nation-Wide
OAKITE CLEANING
Field Service Staff

How to Simplify and Speed-Up Floor Maintenance!

When your floors are washed with VIGOROUS, fast - working Oakite materials specially designed for this important work, you'll find that maintenance is simplified and speeded up, plant safety increased, costs reduced.

Due to penetrating Oakite detergent action, all oil, grease and grime are thoroughly, quickly removed. Floors are left in CLEAN, FILM-FREE condition . . . safe to walk on! NEW Oakite Maintenance DIGEST clearly, briefly tells how to expedite this and 53 other essential jobs. FREE! Send for it today!

OAKITE PRODUCTS, INC.
54 Thames Street, NEW YORK, N. Y.
Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE SPECIALIZED CLEANING

PLASTIC NAME PLATES
DIAL-FACES
CHARTS, SCALES
CALCULATORS
Patent Notices
Instruction Plates
Markers, etc., etc.

LAMINATED
for Permanence

SAMPLES AND ESTIMATES CHEERFULLY SUPPLIED
Dept. NP
HOPP PRESS
INCORPORATED
460 W. 34th Street
New York, N.Y.

Rotary Model 5-D-6

Success of a Mission!

There's hardly an industry that isn't contributing in some way to the production of bombers, fighters, pursuit planes . . . or to the personal needs of the gallant men who fly them. "Keeping 'em flying" demands the supreme effort of every man, every machine on the production line.

PRODUCTIMETERS
on this vital front, give exact count for production control . . . conserve man-hours, eliminate waste. There's a standard counter for practically every need: Stroke, Rotary, Conveyor, Lineal, Wire Measuring, Predetermined, Electric . . . built for speed, accuracy and day after day hard use.

Send for your copy of Bulletin No. 100

DURANT MFG. CO.
1959 N. Buffum St. Milwaukee, Wis.
159 Eddy St. Providence, R. I.

(Continued from page 246)

the Product". Each advertisement offers free copies of the company's "Little Packaging Library" of six booklets which cover every phase of packing and shipping in corrugated boxes.

John G. Phillips, secretary and treasurer, International Business Machines

Corp., has been admitted to membership in the company's Quarter Century Club, having completed 25 years of continuous service.

N. W. Stirling, head of the Heat Transfer Divn. of The N. W. Kellogg Co., has been appointed, on a consulting basis, production director of the Heat Exchange PAW of WPB.

Bemis Bros. Bag Company is establishlishing a multiwall paper bag mill at Mobile, Ala., with C. E. Hayward as manager. Shelby W. Brown will be sales manager.

The Dumore Company of Racine, Wis., recently celebrated its 30th birthday. Illustration shows R. L. Hamilton, vice presi-

dent and sales manager, and G. A. Zimmerman, vice president and general manager, presenting a token birthday cake to Harold Bullmore, one of the company's veteran employees. An excellent souvenir booklet sketching the development of the company and pictorializing various operations and employees who have been with the company more than twenty years was prepared especially for the occasion.

Product Service becomes a division of General Electric Company's Appliance & Merchandise Department, Bridgeport, Conn., with L. H. Taylor as manager.

Charles Belknap, chairman of the executive committee and executive vice president of Monsanto Chemical Co., St. Louis, Mo., is now president of the com-

(Continued on page 250)

This label makes your job easier!

... when you buy fluorescent lighting

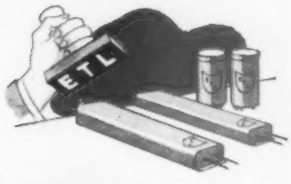
Certified
FLEUR-O-LIER
The Manufacturer guarantees by affixing this label that this Fluorescent Luminaire is a duplicate of samples found by periodic examination to comply with the minimum requirements as set up in the
"SPECIFICATIONS FOR LUMINAIRES, FITTINGS AND AUXILIARIES FOR FLUORESCENT LAMPS"
which are sponsored by the Manufacturers of Mazda Lamps.
Electrical Testing Laboratories, Inc.
NEW YORK, N. Y. 4-43
E·T·L
A COPY OF THIS CERTIFICATE SHOULD APPEAR UPON EACH UNIT OR PACKAGE
FLUORESCENT LIGHTING FIXTURES EMPLOYING EXISTING TYPES OF LAMPS ARE NOT RECOMMENDED FOR SCHOOLS, OFFICES AND SIMILAR LOCATIONS UNLESS LAMPS ARE SHIELDED FROM DIRECT VIEW
THIS CERTIFICATION IS CONTINGENT UPON EMPLOYMENT OF CERTIFIED AUXILIARIES OF OVER 85% POWER FACTOR

A war plant is no place for "post-mortems" or second guessing. Any necessary equipment must be *right!* That's why fluorescent lighting fixtures in many of these factories today bear the FLEUR-O-LIER label. *It stands for dependable lighting!*

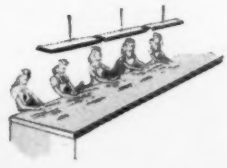
The very backbone of the specifications that guide the manufacture of Certified FLEUR-O-LIER fixtures is *protection for the user!* For FLEUR-O-LIER specifications were written by experts of the MAZDA Lamp makers—to assure good light and good service. Over 40 leading manufacturers build fixtures following these standards.

Impartial experts—Electrical Testing Laboratories, Inc. of New York, test the fixtures to the standards—determine their right to wear the famous FLEUR-O-LIER Certification Label.

This certification includes not only individual parts, such as starters and ballasts, but the assembled unit—ready for installation. No further testing by the user is necessary.



Certified FLEUR-O-LIERS are now available to war plants on suitable WPB priorities. They embody the latest practical designs using non-critical materials. And they give you the same dependable service as always.



Today it pays to be sure! Whether you need 20 feet or 20 miles of light, ask your supplier for fixtures wearing the FLEUR-O-LIER Label.

NEW! Write today for new booklet containing complete FLEUR-O-LIER engineering specifications. You'll want it for your guidance. With it you get the story of the FLEUR-O-LIER program and list of manufacturers. FLEUR-O-LIER MANUFACTURERS, 2139-5 Keith Buillding, Cleveland, Ohio.

FLEUR-O-LIERS

CERTIFIED FIXTURES FOR FLUORESCENT LIGHTING

Participation in the FLEUR-O-LIER MANUFACTURERS' program is open to any manufacturer who complies with FLEUR-O-LIER requirements

When writing Fleur-O-Lier Manufacturers please mention Purchasing

in all

hands

Laminum shims place quick *precision* in the hands of every assembly and maintenance man. (.003 or .002 in. brass laminations bonded together and easily peeled.) Cut to your specifications.

Stock shim materials obtainable from your mill supply distributors. (Write us for sample and illustrated application chart.)

Laminated Shim Company
Incorporated
90 Union Street **Glenbrook, Conn.**

it's
LAMINUM
THE SOLID SHIM THAT *peels* FOR ADJUSTMENT

(Continued from page 248)

pany. Edgar Monsanto Queeny, for the last 15 years president, was elected chairman of the board. Mr. Belknap will continue as chairman of the executive committee.

Grover D. Motherwell has been appointed manager of the Minneapolis district of the B. F. Goodrich Company, succeeding Arthur J. Martin, deceased.

The H. M. Harper Co., Chicago, has opened a factory branch at 210 West 7th St., Los Angeles, Calif., with Clarence A. Gauger in charge.

Edward B. Morrow has been elected a vice president of the Hercules Powder Co., Wilmington, Del., and Francis J. Kennerley succeeds him as treasurer. Leslie W. Mason succeeds Mr. Kennerly as assistant treasurer, and Wm. S. Harkins succeeds Mr. Mason as comptroller. Edward C. Hastings succeeds Mr. Harkins as assistant to the comptroller.

Hungerford Corporation is the new name of the Standard Manufacturing Co., Big Flats, New York. The company recently moved into its new plant near Big Flats.

D. J. O'Connor has been re-elected president of the Formica Insulation Co., Cincinnati. H. A. Faber was re-elected chairman of the board. W. J. Gebhart was made vice president in charge of finances and accounting and a member of the board. Other vice presidents elected are: J. Roger White in charge of sales and advertising; Geo. H. Clark in charge of engineering; R. W. Lytle, in charge of special engineering; Ellsworth G. Williams in charge of manufacturing; Walter H. Kruse was elected secretary.

J. R. Fulton has been made assistant to the manager of the Industrial Department of the Westinghouse Electric & Manufacturing Co. He was formerly manager of the Marine Section.

G. E. Brunner, general manager, National Sales and Service division of the B. F. Goodrich Co., announces a new office is being opened by the division in Atlanta with Maury M. Calvert as manager.

* * *

SCHEDULING IS A LONG-RANGE OPERATION

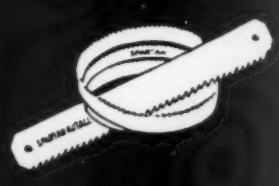
(Continued from page 85)

date and the delivery of the bar is approximately four months. This, however, presupposes the absolute minimum time under the best possible conditions, which means all manufacturers should exert every effort to give the steel mills more time to deliver the products.

(Continued on page 252)

THE *Spartan*

MESSAGE FOR THE P. A.



No matter what the metal cutting job is, there is a SPARTAN BLADE for it and it will satisfy.

Hundreds of plants throughout industry demand and receive SPARTANS from their local Spartan Distributors. We say they'll answer your problems and ask you to make us prove it.

SPARTAN SAW WORKS, INC.
SPRINGFIELD MASSACHUSETTS

HACK and BAND SAWS

THE ORDER ON EVERY FRONT—

"Watch the pressure!"

A CLOCK tells you where you stand, a compass where you're heading, but it takes a pressure gauge to tell you what you're up against! That's why so many of them are used: They unveil the inner-workings of a thousand and one kinds of equipment; tell a story that no other instrument tells.

One of the soundest of all instructions in operating anything from the family automobile to a first line battleship is, "Watch the pressure!" And it's one instruction that practically everybody has learned to respect.

Today, thousands of Marsh Gauges are out where the going is tough. Anxious eyes dart at them on convoys, landing barges, planes, fighting ships —to make sure that all is well, or to catch the first sign of trouble ahead. Commonplace though they appear, no instrument plays a more vital role in today's global drama.

For this vital assignment pressure gauges must be built not only to *be* accurate, but to *stay* accurate. It's an assignment that calls for the kind of construction that has distinguished Marsh instruments for more than 75 years. On every front you will find Marsh instruments doing a vital job supremely well.

The Gauge with the "RECALIBRATOR"

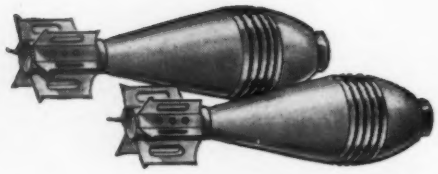
• A gauge built to Marsh Standards is not likely to be knocked out of adjustment. But if it is, the Marsh "Recalibrator" will quickly restore its accuracy. Simply turn the "Recalibrator" screw until the pointer is at zero when not under pressure. The gauge will then be right at all points on the dial. Unlike other methods of re-setting, the "Recalibrator" gets at the root of the error—re-establishes the relation of the bourdon tube to the movement—actually *recalibrates* the gauge.

JAS. P. MARSH CORP., 2054 Southport Avenue, Chicago, Illinois

MARSH GAUGES

DIAL THERMOMETERS ★ RECORDERS ★ HEATING SPECIALTIES

When writing Jas. P. Marsh Corp. please mention Purchasing



VITAMINS FOR A HUNGRY MORTAR

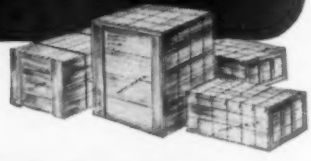
MORTARS are important items of U. S. equipment—in Pacific jungles—on desert sands. But mortars without shells are useless—and mortar shells today, in common with many other supplies to the U. S. armed forces, must travel safely and securely over thousands of miles of land and sea. Strong, durable containers are required to meet the tough conditions—necessitated by speed-up requirements of war.

Mortar shells and other war shipments are reaching the fighting fronts all over the world in General Boxes. Consequently, General Box engineers have gained wide experience and a thorough knowledge of requirements for war products containers. In designing and manufacturing strong, space-saving containers they have co-operated with manufacturers in many industries. They are thoroughly familiar with *all* shipping container requirements.

By taking advantage of General Box's experience, you may be able to solve your shipping container problems quickly . . . and find out which of the allowable alternates is most practical for your products. Write us.

For manufacturers of war products: General Heavy Duty Wire-Bound and Nailed Wooden BOXES and CRATES
For Domestic Service: Corrugated BOXES and Wood Cleated Fibreboard CRATES
Discontinued for the Duration: Generalite and Nailed Strapped BEVERAGE CASES

GENERAL BOX COMPANY



GENERAL OFFICES: 48 West Illinois Street, Chicago, Illinois
DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon; Continental Box Company, Inc.: Houston, Dallas.

(Continued from page 250)

Before any product can be made, the order for the alloy steel must be included in the melt schedule to be approved by WPB—and it requires a full knowledge of all the problems involved to anticipate accurately the time needed for delivery of the finished product.

The Material Distribution Branch of the Army Air Forces, at Dayton, Ohio, is designed to help direct manufacturers to get the right type of steel in time to maintain production. But no one can help the manufacturers who are using aircraft alloy steels as much as they can help themselves — by taking these time cycles into consideration before the order is placed.

PRODUCTION SCHEDULING UNDER CMP

(Continued from page 80)

is highly probable that changes on actual battlefronts would necessitate changes in schedules. As a result, the advance plans must be flexible to permit rapid changes.

For the time being, this problem is to be handled by permitting manufacturers to order percentages of amounts of materials permitted them during a base period. In the future, it may become necessary to work out some other method of handling advance quarter allotments to permit producers greater freedom of action in planning their production schedules.

Helping the Manufacturer

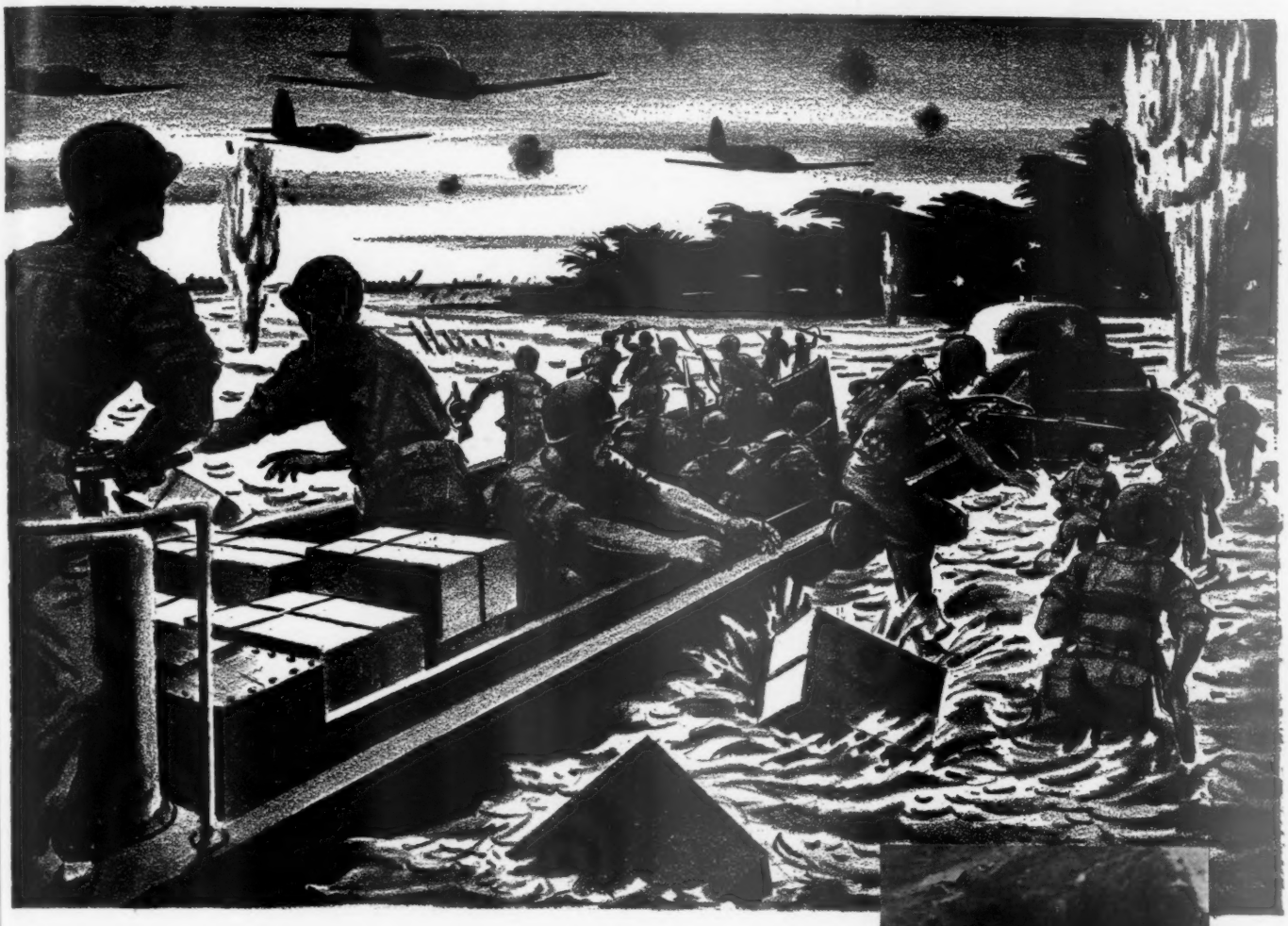
Advance quarter allotments are essential to permit a continuing production schedule in any manufacturing operation. Plans cannot be made on the basis of quarter to quarter supplies of materials, a major defect of PRP which CMP is designed to correct.

In planning for advance production scheduling, the Controlled Materials Plan Division is aware of the fact that it must be constantly on the alert for new fields in which trouble may develop. It must exercise a constant vigilance for shortages of materials in all phases of production programs. In this manner, and only in this manner, will it be possible to prevent development of production bottlenecks. At the same time, should any bottlenecks develop, the Division will stand ready to step into the trouble area immediately to remedy the situation, as it has done in the past with respect to all of the items on the critical components list.

In operating under CMP, indus-

(Continued on page 254)

GAIR BOXES DELIVER



PRECIOUS CARGOES

Gair is working *overtime* on containers for bullets, beans, or bandages—in fact everything essential to win a war.

Containers packed with vital materials for the Armed Forces must be right . . . Gair makes them so that they will arrive at their secret destination—

Write for booklet *showing photographic records of ocean submersion tests made by Gair to meet U. S. Quartermaster Specification No. OQMG-93, Navy Specification 53B11, Lend-Lease Specification FSC-1742-B and FXS-511.*

***WHOLE—DRY—PERFECT*—and ready for action.**

Robert Gair Company, Inc., New York—Toronto

FOLDING CARTONS • BOXBOARDS • FIBRE & CORRUGATED SHIPPING CONTAINERS

When writing Robert Gair Company, Inc. please mention Purchasing

(Continued from page 252)

try should keep one basic fact in mind. U. S. mines and mills are producing as much copper, steel, and aluminum as they ever have. They will continue to produce as much and more under CMP than they did under PRP. This means that the total volume of production under CMP will be as great or greater than is was under PRP.

What CMP does mean is that these quantities of materials will be used more efficiently than they were under PRP. Simply, CMP provides a planned production which will yield a greater total of completed military items than did PRP. It will mean that items will be completed under a planned war program, rather than only partially completed on schedule as was frequently the case under PRP.

The transition from PRP plant scheduling to CMP program scheduling will not be an easy one to make. It will be a period during which the entire CMP scheduling plans and programming plans will be subject to alteration and refinement. However, the benefits to be derived will offset these difficulties, inasmuch as the planning and advance scheduling will permit more effective war production in all types of manufacturing and producing operations. This will simplify production problems all along the line.

Cooperation of industry is necessary in effecting the transition from PRP to CMP operations, and for the smooth operation of the plan. Problems and suggestions should be addressed to the WPB Controlled Materials Plan Division, Education and Inquiry Branch, Railroad Retirement Building, Washington, D. C.

* * *

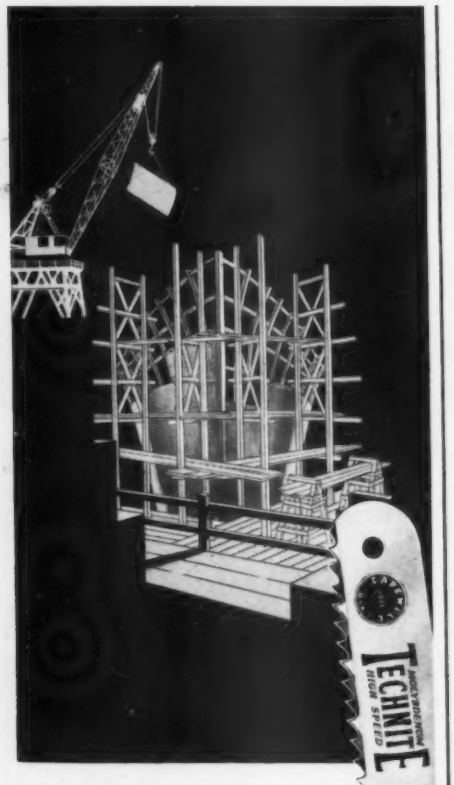
STOCKROOM LIGHTING

(Continued from page 99)

tem can be employed to obtain the desired foot-candles.

Typical filament stock bin units equipped with 100-watt lamps are usually spaced no greater than 8 feet apart, in order that the illumination will not fall below the 10 footcandle level recommended for good stock bin lighting. A 48-inch 40-watt fluorescent unit may be placed on the same spacing with comparable illumination results.

(Continued on page 256)



CAPEWELL
wins new friends at
SHIPYARD

An Eastern shipyard wanted a blade capable of standing up to accelerated production schedules. After a trial of Capewell's *Technite*, they have been using this hack saw blade regularly. How about learning what Capewell can do on *your* job? THE CAPEWELL MFG. CO. HARTFORD, CONN.

Free, New Handbook for Shop Men

To help you make hack saw blades and band saw blades cut more efficiently and last longer.

THE TREND IS TO TECHNITE
THE MOLYBDENUM HIGH SPEED HACK SAW BLADE
CAPEWELL

ARGUS EYES ARE WATCHING

Prepared for action, thousands of civilians are on day and night duty scanning far horizons . . . ever vigilant to give warning of danger before it arrives.

The Argus Spotting Scope, one of our many peace-time optical instruments, now in service with the armed forces, is an invaluable aid in detecting the approach of the enemy.

On far-flung war fronts, too, Argus eyes in binoculars, fire control, and other optical and radio control instruments, are widely used . . . watching and working for the United Nations.

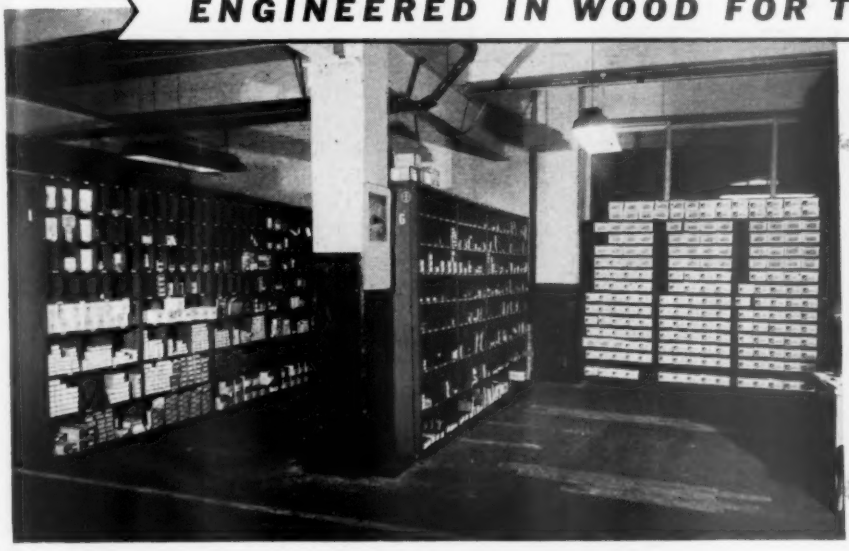
BUY WAR BONDS

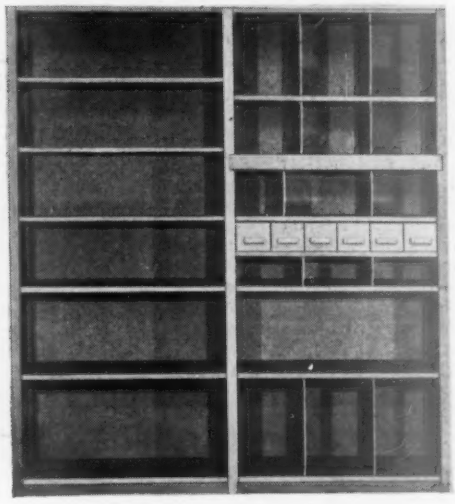
argus
SUBSIDIARY OF
INTERNATIONAL INDUSTRIES, INC.
ANN ARBOR • MICHIGAN

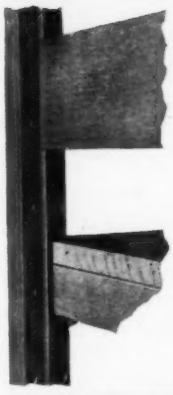
Fine American Made Cameras • Aviation Radio Equipment

LYON *Adjustable* SHELVING

ENGINEERED IN WOOD FOR THE DURATION







VERTICAL ADJUSTMENT EVERY 3"
Uprights are drilled on 3" centers, providing for quick shelf adjustments, using patented clip—NO TOOLS NECESSARY.

HORIZONTAL ADJUSTMENT EVERY 3"
Even the inexperienced can remove and relocate a divider in a few seconds, using the Lyon patented fastener—NO TOOLS NECESSARY.

The Answer

TO YOUR WARTIME STORAGE PROBLEM

Lyon Wood Shelving (patent applied for) is simple to adjust to meet the changing storage requirements of your wartime operation. Storage spaces may be adjusted every 3" vertically and horizontally, because:

1. Uprights are drilled on 3" centers for shelf adjustments.
2. Shelves are drilled on 3" centers for adjustment of crosswise dividers.

Racks are quickly and easily set up, re-arranged, or moved from one location to another . . . with inexperienced help. Uprights are all assembled and are reversible front to rear. Shelves are in one piece, made of glued hardwood.

Complete assembly requires only one tool—a screwdriver.

LYON METAL PRODUCTS, INCORPORATED
General Offices: 3305 Madison Ave., Aurora, Ill.
Branches and Distributors in All Principal Cities

LYON METAL PRODUCTS, INCORPORATED

LYON METAL PRODUCTS, INCORPORATED
3305 Madison Ave., Aurora, Ill.

Send catalog of Lyon Adjustable Shelving and Complete Line of Storage Units engineered in wood.

Name_____

Address_____

City_____ State_____

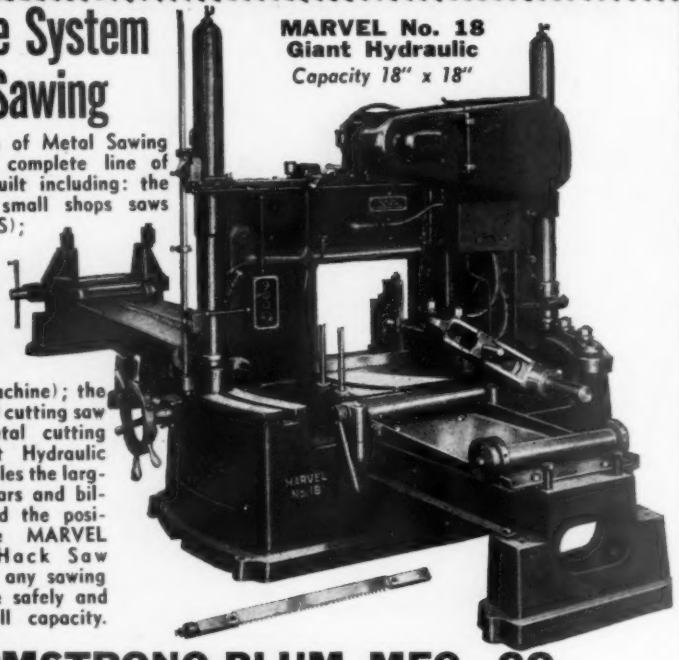
When writing Lyon Metal Products, Incorporated please mention Purchasing

MARVEL SAWS

Complete System of Metal Sawing

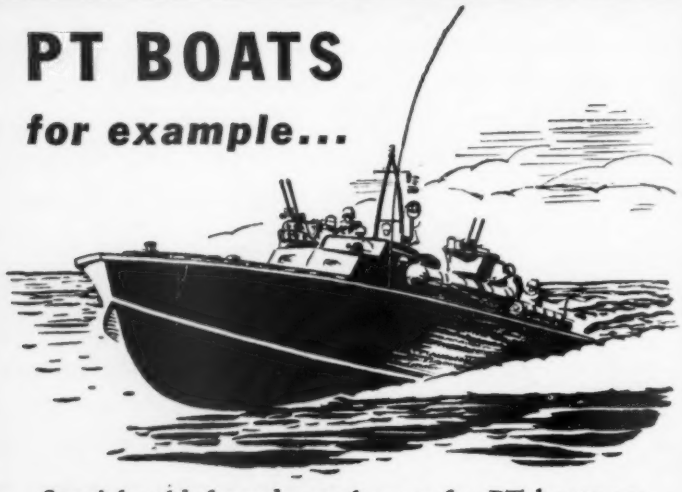
The Marvel System of Metal Sawing provides the most complete line of sawing machines built including: the most widely used small shops saws (80% are MARVELS); the fastest high speed hack saws built (automatics that will cut-off identical bars with no more operator attention than an automatic screw machine); the most versatile metal cutting saw—(a universal metal cutting band saw). Giant Hydraulic hack saw that handles the largest and toughest bars and billets with ease; and the positively unbreakable MARVEL High-Speed-Edge Hack Saw Blades that permit any sawing machine to operate safely and continuously at full capacity.

MARVEL No. 18
Giant Hydraulic
Capacity 18" x 18"



ARMSTRONG-BLUM MFG. CO.
"The Hack Saw People"
5700 Bloomingdale Ave. Chicago, U. S. A.

PT BOATS
for example...



Special cold-forged metal parts for PT boats are made on equipment used regularly in the manufacture of Hassall nails, rivets and screws. Thousands of similar examples. Catalog free.

JOHN HASSALL, INC.
Established 1850
404 Oakland Street • Brooklyn, N. Y.

SPECIAL NAILS RIVETS SCREWS
Hassall

(Continued from page 254)

Closer spacing naturally will result in better illumination on the bin and would be desirable depending upon the amount of activity at the individual bins.

A clever lighting solution for a storage bin was evolved by a Committee of the Illuminating Engineering Society during their survey of the shoe manufacturing industry.

The bins in the plant surveyed have a 3-foot aisle between them. Light from overhead units adequately lights the front section of the bin; as may be supposed, the back part remains in comparative darkness. To provide light at the back of the bins, by means of the overhead system, the interior of the bins were painted with two coats of aluminum paint and wedges of aluminum covering were laid across the base of each bin at front, as illustrated, and securely fastened with carriage bolts to the base of the bin. With this arrangement the light from the overhead units strikes the ramp incline of the wedge and is reflected to the walls and ceiling of each bin, thus increasing the level of illumination in the bin interior by as much as 50%.

1 1 1

WHAT'LL YOU HAVE?

(Continued from page 110)

Under office equipment:

A Thumb tack is a "Drawing pin"

We have some good examples under clothing:

An apron, leather is an "Apron, Basil"

Breeches, wool, O.D. is "Pantaloons, Bedford Cord or Motor Cyclist"

Buttons, tack—"Buttons, bachelor"

A cap, service (overseas) is a "cap, forage"

Garters are "suspenders"—the word, "garters" in England means the circular elastic garter that used to be worn by women, if I am not mistaken.

Insignia, shoulder, sleeve is a "Divisional sign or flash"

A mackinaw is a "belted reefer jacket or a Monkey jacket"

A muffler, wool is a "cap comforter"

An overcoat is always referred to as a "Greatcoat"

Shoes, low quarter are known as "shoes"

Shoes, high are known as "boots"

(Continued on page 258)

NEVER BEFORE IN ANY WAR—
BARRAGE BALLOONS
nor
these modern "steel muscles"
that hold them in place . . .

Preformed wire rope

Half the battle, in the performance of this great modern defensive weapon, is the part played by Preformed Wire Rope—not only the anchor lines which hold these balloons captive, but the steel tentacles that entangle and destroy invading planes.

Throughout this mechanized war—from the striking weapons of offense, to behind-the-line production and transportation of those weapons, there is hardly a task in which Preformed Wire Rope is not at work demonstrating its greater strength, greater stamina, longer life, man-hour saving and cost reduction—developed on peace-time industry's proving ground.

Ask your own wire rope manufacturer or supplier

OIL DID THIS!

Stop such costly accidents . . . keep floors *dry* and *safe!*

FIBRE-TEX FLOOR COMPOUND

Fireproof . . . won't burn

Fibre-Tex provides added protection against fire hazard. Even the intense flame of a blowtorch will not ignite it, and it is not subject to spontaneous combustion. Fibre-Tex contains no sawdust, wood pulp or other organic material—it simply will not burn.

Absorbs oil . . . faster

Greater absorbency, in volume and in speed. Fibre-Tex not only picks up oil with amazing rapidity, but a mere ounce of Fibre-Tex absorbs a full 100 cc. of oil and thirsts for more. Fibre-Tex picks up water and acids, too!

"Non-Slip" . . . safer

Fibre-Tex keeps floors safer underfoot—first, through removing oil by mere sweeping and, second, by effective "non-slip" qualities when compound must remain constantly on the floor to absorb splashing or dripping oil. Fibre-Tex reduces accident risks!

Send for FREE test package—WRITE TODAY TO—

LACEY-WEBBER CO.
KALAMAZOO • MICHIGAN
AUTOMOTIVE AND SCIENTIFIC APPARATUS AND PLASTIC MOLDING

(Continued from page 256)

Undershirt, summer, sleeveless
is a "vest, tropical"

In the list of Post Exchange items you will note that:

Bobby pins are "hair grips", and
Cookies are "biscuits"

When we were discussing our requirements of cookies with Ministry of Food they had no idea what we were talking about because it seems that the movies and jazz bands have had a great influence in establishing some of our American expressions over here, and you will recall that some years ago there was a song entitled "Lookie, lookie, lookie, here comes cookie" and the Ministry of Food people thought that we were talking about women rather than biscuits.

A shoe dauber is a "blacking
brush"
Sanitary napkins are "sanitary
towels"

And here is one that we had quite a bit of difficulty over—

A sewing kit is a "Housewife",
pronounced "Hussif"

Plain ordinary absorbent cotton is known as "cotton wool" over here. "Cotton" usually means cotton sewing thread. The other day I went to the Royal Automobile Club for a swim and asked the attendant for some cotton to put in my ears. He must have thought I was crazy. I finally had to tell him that what I wanted was soft, loose cotton. He then answered and said that what I wanted was cotton wool.

Under Engineer items, some of the most glaring examples are:

Excelsior is known as "wood,
wool" over here.
Kerosene is "paraffin" and of
course you all know the
difference between gasoline
or gas and "petrol".

Under Medical items it is interesting to note that the British use the Latin nomenclature for drugs, etc. For instance, Cod Liver Oil is known as "Oleum Morrhuae", and here is another wonderful example:

A hot water bag or bottle is
known as a "stomach warmer" over here.

A battery is an "accumulator".

An interesting comparison is bandage material. For instance, our muslin bandage is known as "calico" and our cheese cloth bandage is known as "muslin".

Under Signal Corps items there are also a number of interesting illustrations:

Crocks are known as "jugs"
Graduates are "measures"
A ground rod is a "pipe, earth"

(Continued on page 260)

DO YOU HAVE A FABRICATING PROBLEM?

adhering? sealing?
insulating? coating?
impregnating?
sound control?

There are over a hundred different types of adhesives, coating and impregnating fluids, sealants and sprayon insulators in the 3-M Line—made from reclaimed rubber, synthetic rubber, synthetic resins and non-rubber materials.

Have you a problem that calls for one of these products?

Our engineers have had years of experience solving these problems and are available to review your manufacturing procedure and make recommendations as to the type of 3-M Adhesive to use.

Why not avail yourself of this service—there is no obligation.

our field engineers will be glad to help you

MINNESOTA MINING & MFG. CO.
SAINT PAUL MINNESOTA

Gentlemen: P 543
Kindly have one of your adhesive engineers call

on Mr. .....

Company .....

Address .....

City ..... State .....

★ ★ ★ ★ ★ ★ ★

Tested under all manner of shop conditions, Winter taps have proven to be consistently good. Now, with *production* so vitally important, it is imperative that taps turn out vast quantities of perfectly threaded pieces.

It is this tested quality to produce long after you would expect to discard them that has made Winter Taps the approved threading tools in hundreds of war factories.

A Division of
The National Twist Drill & Tool Co.
Detroit, Michigan

Winter Brothers
COMPANY
Wrentham, Massachusetts, U. S. A.

When writing Winter Brothers Company please mention Purchasing

XLO Music Wire under constant laboratory control from original steel to finished product . . . an exceptionally high quality product that meets every demand of commercial and governmental specifications (WD 1085 - WD 1095). Stock sizes .004" to .180" dia. In coils or packages.
JOHNSON STEEL & WIRE CO., INC.
WORCESTER * MASSACHUSETTS.
NEW YORK
AKRON
LOS ANGELES

CONSERVE these Valuable TOOLS
PAX
SKIN CLEANSER
The skilled hands of industrial plant workers are tools . . . important, irreplaceable tools! They require the finest care to conserve their efficiency . . . and productivity. That's why in thousands of the largest war plants, PAX work-conditions the hands of millions of men and women war workers.
Lanolin?
Yes, indeed! PAX formulas have used lanolin for 18 years. PAX suds profusely! Cost? About ½¢ per worker per week!
PAX scientifically formulated industrial skin cleanser keeps the hands flexible, healthy and productive. PAX does not dry-out the skin because . . .
1) pH below 10
2) NO Free Alkali
3) Low Alkaline Salts
PAX
2040 Walnut, Dept. P St. Louis, Mo.

Believe it or Not—
PERMAG
Cleaning
Compounds
● solve industry's toughest problems—remove heavy grease, oil, dirt—producing a chemically clean surface prior to finishing.
● clean surfaces heretofore considered impossible.
● are proven unequalled for quick action, efficiency and economy for industrial uses.
And that why PERMAG Compounds have an unbeatable record in plants producing war material.
PERMAG is helping to CLEAN the way to Victory!
Write and we'll send details.
No obligation.
MAGNUSON
Products Corporation
Mfrs. of Specialized Scientific Compounds for industrial purposes.
50 Court St., Brooklyn, N. Y.
Representatives also. Warehouses in principal cities. In Canada: Canadian Permag Products Ltd., Montreal, Toronto.

(Continued from page 258)

Sockets are "lampholders"

A wire pike is a "stick, crook".

I think these illustrations will suffice to give you an idea of some of the difficulties that can be encountered if we do not sit down and have a common understanding as to what exactly we are talking about. It means more than preparing a requisition or demand in terms of American nomenclature, because, as you have seen, in a great many instances the British do not have any such item, and, furthermore, they do not know what we are talking about.

Those in merchandizing businesses, or in the business of providing equipment and supplies for railroads or other type of utilities and institutions, must know the type or style of goods handled by the competitor, even to the smallest detail of style as well as cost. Without such knowledge of the other fellow's business, the firm or corporation would become second-rate, or fail.

We who are in the greatest business there is today in the World—the task of supplying the armed forces of the United Nations—cannot be less proficient than if we were in a civilian undertaking.

1 1 1

HELP FROM TESTING LABORATORIES

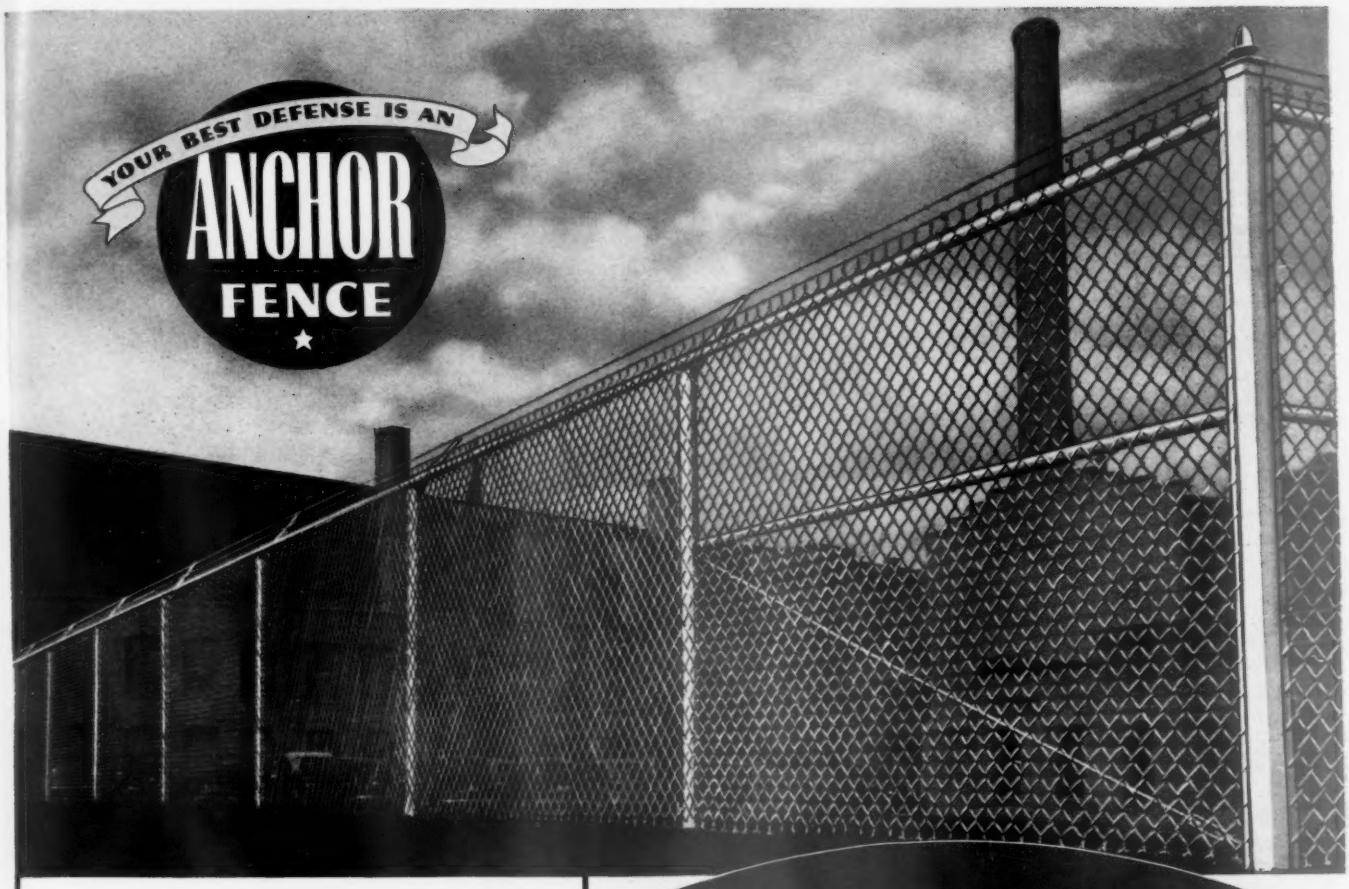
(Continued from page 83)

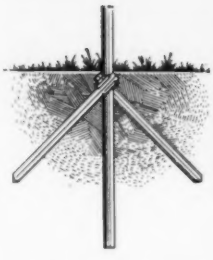
similar products also are tested. The data from these tests are filed. When the change-over comes, this company will be one of the first in the peacetime field. One of the company's most recent investigations was of adhesives for packaging. The purchasing department never had felt that it knew all it should about this comparatively minor item. The new data found by the laboratory, is particularly useful for war shipments now, but will mean worth while savings when consumer goods shipping is resumed.

Laboratories which do these kinds of work may be jointly owned by the companies which use them, or may be independent consulting organizations. Many purchasing departments divide their testing between the two types, thus avoiding the need of buying specialized and highly expensive laboratory equipment, and of adding to their own laboratory personnel.

Consulting laboratories are largely specialized on such fields as electrical, metallurgical, textile, and the

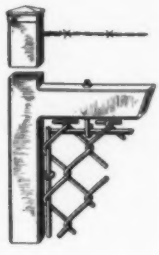
(Continued on page 262)





"Drive-Anchors" . . . driven deep into sub-soil, hold posts permanently erect. The angle-shaped "Anchors" extend at right angles to the fence-line, are clamped to posts to form a three-point "tree-root" anchorage. Strain severe enough to bend posts will not shift anchorage below the ground.

Anchor Square Frame Gates . . . built of strong, 2" square steel tubing, inseparably butt-welded at *all* corners, provide amazing rigidity, freedom from sagging and warping. Fabric is firmly held by rounded steel tension rods. Made in both single and double types, for any size opening.



Anchor "Clamp-On" Hinges permit 180° swing of gate. Can be adjusted to open either in or out. Swing freely without sagging and look more attractive, even after years of service. Clamp to the gate. No holes to weaken the gate structure or to admit moisture.

Copper-Bearing Steel Wire, galvanized *after* weaving, armored throughout by thick zinc coating, 4 to 5 times as heavy as that applied to ordinary commercial wire—explains why Anchor fabric lasts years longer than other fencing.

Here's Why War Plants Choose

ANCHOR FENCE

For Tough Protection Jobs

IT takes a real fence to solve the problems of war plant protection. And from Maine to California, manufacturers have picked Anchor because on every count Anchor does the job better! Anchor Fence can be quickly erected in any soil, in any weather, even when the ground is frozen. The exclusive, patented "Drive Anchors" (illustrated at left) hold the fence permanently erect and in line, resist terrific force, yet can be speedily moved without loss in case of plant expansion.

Anchor Fences are now available only under priority regulations to war manufacturers who need protection *fast*. But when peace comes, Anchor's exclusive features will again set the standard on all industrial fencing operations.

Meanwhile, Anchor continues to give the best wartime fencing service available. Anchor's nation-wide organization is ready to help you on any fencing problem . . . moving, repairing, painting, re-aligning every type of fence. Consult the classified section of your phone book or write for address of your nearest Anchor representative. There is no obligation, of course.

ANCHOR POST FENCE COMPANY

6615 Eastern Avenue Baltimore, Maryland

—on Any Fencing Problem ★ *call Anchor!*

When writing Anchor Post Fence Company please mention Purchasing

Vital Links in modern Production

ALLIED MACHINE & ENGINEERING CORP.
NEW PHILADELPHIA, OHIO

DANDUX Quality Canvas

THE USE of "Dandux" by leading railroads, industrial and marine organizations attests to the greater value, economy and precision craftsmanship of "Dandux" Canvas Products.

Their *extra* margin of service — is your guarantee of canvas value supremacy. Send for free descriptive folder and full information on your requirements, today.

C.R. DANIELS Inc.
Manufacturers of Everything of Canvas
44 WEST ST. • NEW YORK, N. Y.
Chicago • Los Angeles • Boston • Buffalo • Cincinnati • Cleveland • Dallas • Detroit • Newark • Philadelphia • Pittsburgh

Permanently Accurate
Torque Wrenches

A Complete Line
of permanently accurate measuring and gauging wrenches that are standard in leading war plants for gauging and controlling torque in production and for testing and measuring in inspection. Indestructible taper beam construction. Double scale visible from all working angles. Capacities from 0 to 7200 inch pounds.
Write for Bulletin

NO
Friction
Adjustments
Moving Parts
Fragile
Mechanisms

P.A. STURTEVANT CO.
ADDISON QUALITY ILLINOIS

(Continued from page 260)

like. A list of those available, and the type of tests they are equipped to make, may be had from a U.S. Bureau of Standards publication titled "Commercial Testing Laboratories."

* * *

DETERMINING THE RIGHT PURCHASE PRICE

(Continued from page 98)

tion directly from the supplier, there are two general approaches to this problem.

One method of obtaining the labor-materials relationship is to consult the Biennial Census of Manufactures, published by the U. S. Department of Commerce. Data are available there to show the annual amounts of wages paid and the annual costs of materials in a large number of industry and product groups. The data are also classified by states. Census figures, however, are subject to some limitations when used for this purpose.

(1) They are published only once every two years, and there is a considerable time lag between the date for which the data are collected and the date of publication. By the time the buyer can obtain the information, technological changes in the supplier's industry may have changed the relationship between labor and materials costs.

(2) The Census figures for costs of materials include, in addition, the costs of fuel, purchased electrical energy, and supplies. These overhead items cannot be isolated from the total figure; and their inclusion results in a somewhat incorrect statement of the desired relationship. The accuracy attainable is further reduced by the inclusion of the cost of indirect labor in the figures for wages paid.

The method of using the Census data after the approximate relationship between materials and labor has been obtained is illustrated by the following example:

Suppose that the Census of Manufactures indicates that labor costs were 150 per cent of materials costs in the supplier's industry in 1937. It is now necessary for the buyer to know the supplier's average unit cost of materials in that year, which may be secured from his past price analysis records. Let us assume that

(Continued on page 264)

We found a way
to out-fox the Axis
WHEN THEY CORNERED
SWEDISH SPRING STEEL
THINGS looked serious when Hitler shut off shipments of steel from Sweden. Valve springs—so all-important to the efficiency of automotive engines—were made largely from Swedish steel wire rods. Manufacturers swore by the Swedish product—thought nothing could take its place.
Faced with this situation, our metallurgical experts went to work and developed a domestic valve spring steel not only equal to the finest Swedish product, but *better*. Today our plants are making huge tonnages of this steel by the Open Hearth process, employing closely controlled heat treatments and newly developed wire-making practices. The Axis has been out-foxed again—they failed to put a crimp in America's automotive production.
Valve springs made from this domestic steel are giving superb service in the hard-working motors of American trucks, tanks and jeeps. Even in the stepped-up requirements of war service they are doing an outstanding job.
Production of this superior valve spring steel was no lucky happenstance. It was possible because of our long experience, as America's largest wire makers, in making high grade steels.
This wire-making "know-how" has helped solve one tough war problem after another. From this unequalled background and the accelerated progress of these war years, will come new and finer products to serve you in the coming years of peace.
AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
United States Steel Export Company, New York
Wire
for War Products
COLD FINISHED STEEL BARS · COLD ROLLED
STRIP STEEL · MANUFACTURERS' WIRES
STAINLESS STEEL · SPRING WIRE
WELDING WIRE · WIRE SPRINGS
UNITED STATES STEEL

FOR BETTER CHAIN SERVICE
TAYLOR-MADE CHAINS

Protect Your Chains

Insure Safety of men—conserve steel—add years of chain service.

1. Clean chains regularly. Don't let dirt, rust or grit put their fingers on your chains.
2. Inspect chain regularly.
3. Avoid kinks and knots. Protect chain at load corners and edges.
4. Don't overload. Follow SAFE WORKING LOAD ratings.
5. Be sure load is balanced.
6. Take up slack slowly.
7. Lower loads slowly.
8. Protect stored chains. Do not leave chains on ground or exposed to weather.

TAYLOR-MADE CHAINS

Toughest material, TAYLOR Heat Treatment, Taylor Electric Welding, and Taylor Design mean DEPENDABILITY. Note bulge inside BOTH sides of links of Taylor-Made Alloy Sling Chain above — for greater strength.

TURN IN YOUR SCRAP NOW!

Taylor-Made line includes chains for every load, pull, or use. Send for complete catalog.

ESTABLISHED 1873
S. G. TAYLOR CHAIN CO.
BOX 509-P Hammond, Ind.

(Continued from page 262)

this cost was 25 cents. Then the supplier's labor cost per unit of product in 1937 was 150 per cent of 25 cents, or 37.5 cents. The next step is to bring this figure up to date by correcting it for changes in the price of labor from 1937 to the present. If the present value of an appropriate index of the price of labor is 160 and the average 1937 value of the same index was 130, then the supplier's present labor costs may be approximated as 46.2 cents.

This value can be added to the present materials cost of the product, which is determined by means of a cost equation derived from a laboratory analysis of the product, as previously described. The result is a single figure which represents the supplier's present costs of materials and labor, and in which these two factors are weighted approximately according to their relative importance. Periodically, of course, this index must be revised in accordance with changes in the cost of labor and the market prices of the materials involved.

A second method of determining the relationship between the supplier's labor costs and his materials costs is to analyze the product or the drawings of it in order to estimate the time required to manufacture it. This estimated time, of course, must be multiplied by an estimated or known wage rate in the supplier's plant in order to arrive at the labor cost per unit of product. The labor cost approximated in this manner is already on the same base with the present cost of materials, and the two factors can be added together to obtain the price analysis index.

The method of using such an index by plotting its values on a semilogarithmic grid along with fluctuations in the purchase price, and so comparing percentages changes in one with percentage changes in the other, has already been mentioned. On the assumption that overhead and profit are constant percentages of the price, the fluctuations should be such that the two lines remain approximately parallel. It must be remembered, of course, that the validity of this assumption varies with the nature of the vendor's overhead costs; hence deviations from the parallel relationship may be justified in some cases.

One caution should be emphasized in connection with single index price analysis: the relationship of labor

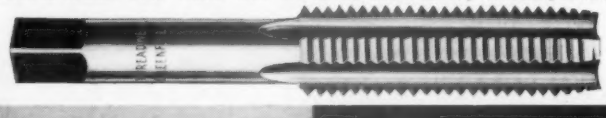
(Continued on page 266)

By Threadwell's Personal Attention!

The "villain" of today's thrilling drama of war production is Herr Bottleneck, super-stooge for Hitler, arch-fiend of subtle sabotage.

To "foil" this villain, Threadwell has time and again risen to heroic heights. First, by making taps that have broken performance records in many plants. And second, by working with Threadwell distributors to give *personal attention* to each order and inquiry. Thus Herr Bottleneck the Villain has been thwarted, orders have been expedited, and the curtain has come down in the middle of Hitler's neck.

THREADWELL TAP AND DIE CO., GREENFIELD, MASS., U.S.A.



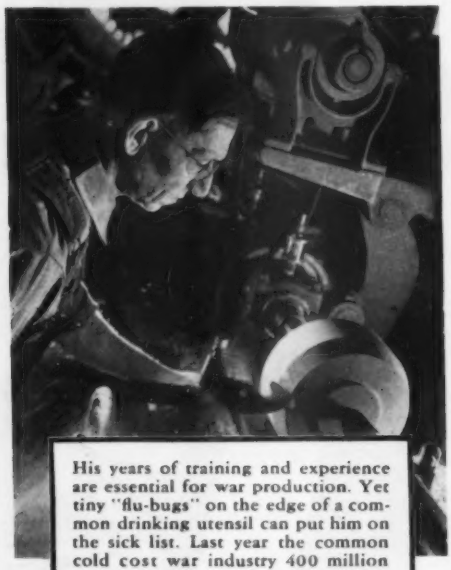
Export Stocking Distributors
CANADA: BRIDGE MACHINERY CO., MONTREAL
ENGLAND: SKYLUX LTD., LONDON

Threadwell
"TAPS OF DISTINCTION"

More POWER For Your Man Power
The right tool for every job means more power for your man power . . . plus greater speed and better workmanship! With the increasingly critical labor shortage there is now no place for obsolete tools, "slow" tools, or tools poorly adapted to the job. Fast, flexible and accurate, modern Snap-on tools are giving added efficiency to man power in countless maintenance, production and assembly operations. Snap-on tools are distributed through 35 factory branches located in key production centers. Write for catalog and address of the nearest branch.
SNAP-ON TOOLS CORPORATION
Kenosha, Wisconsin
8048-E 28th Avenue
Snap-on Tools
THE CHOICE OF BETTER MECHANICS

When writing Snap-On Tools Corporation please mention Purchasing

War Winners at Work



His years of training and experience are essential for war production. Yet tiny "flu-bugs" on the edge of a common drinking utensil can put him on the sick list. Last year the common cold cost war industry 400 million man hours! Play safe — use single-service paper cups at all fountains.

Purchasing Agents

AJAX is a wedge-shaped cup without side seams or folds. It fits into the hand open and ready for use. Dispenser holds 250 cups nested.

AERO is a round paper cup, with rolled edge and inset bottom. Dispenser holds 100 cups nested.

Columbian and PEERLESS are strong flat cups, packed 250 in dispensing cartons.

All cups are withdrawn from dispenser without touching drinking edge.

AJAX AND AERO

Sanitary Paper Drinking Cups

LOGAN DRINKING CUP CO.
68 Prescott Street, Worcester, Mass.
PACIFIC COAST ENVELOPE CO.
416 Second Street, San Francisco
Divisions of United States Envelope Co.

USE

Envelopes . Transparent Containers . Paper Cups . Writing Paper . Note Books . Toilet Tissue . Paper Towels

(Continued from page 264)

cost to materials is by no means a constant one. The buyer should keep himse'f informed as to technological changes in the supplier's industry and should adjust his index to allow for any decreases in the importance of the labor cost element in the price of the product.

The Extent to Which Cost Analysis is Applicable

Most of the suggested methods of analyzing the elements of cost are somewhat involved and should, in general, be used only in connection with items which are important purchases and for which adequate price information is not otherwise available. Where any of the proposed methods are applicable, the extent to which they are used will depend upon the losses possible if purchasing is done inefficiently. That is, the cost of maintaining price analysis methods should be weighed against the possibilities of saving money thereby.

In the event that some items to be purchased regularly are of such small value that complicated cost analyses are impractical, the buyer may find it necessary to depend upon the integrity of the supplier. He can of course check the price against that of the last purchase of the item; and he may also find it desirable to solicit bids at infrequent intervals.

In connection with the more important purchases, the careful use of price analysis may be expected to accomplish three things: First, it will save money for the buyer by serving as the basis for avoiding unnecessarily high prices; second it will assist the buyer to protect valuable sources of supply when it is desirable to do so, by assuring a fair profit to the supplier; third, it will perform a service to society in general by forcing suppliers to *earn* their profit through efficient production.

It should be noted that the usefulness of price analysis under present-day conditions is limited because of the operation of extensive wartime governmental controls. The system of priorities and allocations, for example, has reduced the importance attached to price and has correspondingly increased the emphasis placed upon actually obtaining the required goods. The recent advent of price control, of course, has had a much greater and more direct effect toward curtailing the applicability of price analysis, since commodity prices generally are expected to rise to the established ceil-

(Continued on page 268)

RAZOR-BACK Shovels still give you 60% MORE BACKBONE

Extra thickness in center, with tapered sides, gives 13 gauge strength with only 15 gauge overall weight—meets wartime regulations.

Preferred by Priority Buyers

for Perfect Balance, Deep Hang, Long Life, Easy Handle Replacement.

Write for Free Training Manual "How to Get More Work Out of a Shovel."

THE UNION FORK & HOE COMPANY
596 Hocking Street Columbus, Ohio

RAZOR-BACK
the Original Tubular Shank Shovel

These Hands Work for Hitler

Because they're not working in your plant, due to an avoidable accident!

These Hands Work for Freedom

They're on the job, busy every day producing war needs because they are

protected with

Stanzoils

The gloves made of DuPont's miracle synthetic, neoprene, that resists attack from oils, acids, caustics, other harmful materials, often last 3 to 7 times as long as rubber. Stanzoils help stop accident absenteeism in your plant, save costly injury claims, give willing workers a break. Write for Stanzoil's story and latest delivery data.

Synthetic Rubber Division
THE PIONEER RUBBER CO.
257 Tiffin Rd., Willard, O., U.S.A.
New York · Los Angeles

STANZOIL PIONEER

MADE WITH DU PONT NEOPRENE

THE PRODUCTION ARMY NEEDS HARD-HITTING SMALL ARMS, TOO

When you're shooting for big production gains, make sure the "small arms" you are using – the cutting tools – are accurate, efficient, dependable!

MORSE THERE IS A DIFFERENCE

TWIST DRILL AND MACHINE COMPANY
NEW BEDFORD, MASS., U. S. A.

NEW YORK STORE: 130 LAFAYETTE ST. - - - - CHICAGO STORE: 570 WEST RANDOLPH ST.

When writing Morse Twist Drill and Machine Company please mention Purchasing

. . . that pint you gave

IT may be that many months may pass before the blood you gave will save a life . . . the place may be thousands of miles away.

The preparation of blood plasma is a meticulous process in which a special type centrifuge plays an important part. Centrifugal force, developed at enormous speed, with smooth acceleration, packs down the red cells and increases the yield of blood plasma. This calls for sturdy equipment, built for continuous duty.

The Ward Leonard Rheostat shown on this International Blood Plasma Centrifuge was selected as the motor control because of its dependability, its many accurate steps, and its electrical interlock which assures a slow start irrespective of when the switch is closed.

Ward Leonard Rheostats are available in a wide range of sizes for single and multi-mounting, manual or motor drive. Send for bulletins describing these and other type rheostats.

ARMY E NAVY

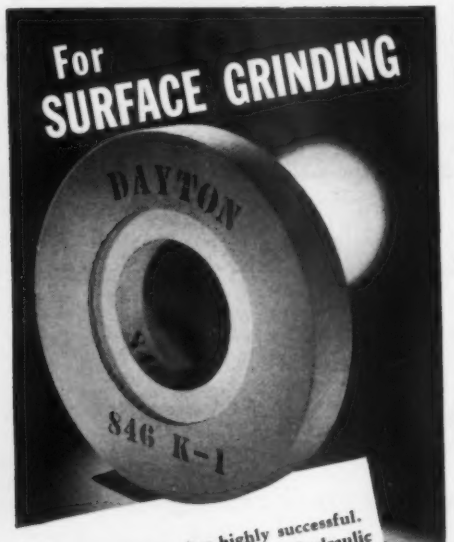
WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control (WL) devices since 1892.

WARD LEONARD ELECTRIC COMPANY, 50 South Street, Mount Vernon, New York

For SURFACE GRINDING



This wheel is proving highly successful.
(1.) Surfacing mild steel on hydraulic grinder . . . giving maximum stock removal with minimum of wheel wear.
(2.) Precision grinding of hardened steel parts . . . with high production.
(3.) Ideal for surfacing materials, saves time usually required to change wheels.
If you have an unsolved problem in surface or any other grinding, we may have the answer. We may even have what you want in stock.

Dayton Grinding Wheels

Simonds Worden White Company
708 Negley Place, Dayton, Ohio

ROOMS FOR COMFORT

Every room in DeWITT OPERATED HOTELS is comfort-planned

In Cleveland
HOTEL HOLLENDEN
In Columbus
NEIL HOUSE
In Lancaster, O.
THE LANCASTER
In Corning, N. Y.
THE BARON STEUBEN

Check IN

THEO. DeWITT — DeWITT OPERATED HOTELS — PRESIDENT

(Continued from page 266)

ing levels and to remain there for the duration of the war. With the eventual removal of these controls, however, price analysis will return to its former position as a highly important aspect of the purchasing function; and the methods herein suggested may be expected to continue to yield profitable results to the purchaser.

FEDERAL PROCUREMENT POLICIES IN THE POST-WAR ERA

(Continued from page 90)

ber of agencies at the close of the war will render surplus considerable quantities of Federal property. Surpluses should be redistributed only to the extent actually needed; supplies and equipment not immediately required by other Federal activities may be disposed of in commercial markets at a rate which will not disrupt domestic price structures. Consequently, considerable quantities of surplus property will have to be stored, and protected from deterioration. In many cases, equipment held for subsequent redistribution will have to be reconditioned and repaired.

In the period of reconstruction, civilian demand for durable consumers goods should create an extensive domestic market for certain types of surplus. In this connection, Executive Order No. 9235, which provides for the utmost utilization of Federal property by equitable allocation to Government agencies, should prove effectual.

To the extent that this country will figure in rehabilitating areas impoverished by Axis occupation, export demand will absorb excesses. Other factors tending to stabilize the consumption of surplus property are the magnitude of postwar readjustment, and the need for Government participation in restoring the dislocated economy of the nation. Supply and demand apply as directly to the disposal of surplus as to any other phase of procurement. Problems of storage and reconditioning, however, are special considerations. Experience of the Procurement Division in normal times in the discharge of this function should prove helpful in coping with the postwar situation.

Although the General Accounting Office has stressed minimum needs, these have been defined negatively, and only incidentally in connection with postaudit problems. Under

(Continued on page 270)

"Pittsburgh" Announces NEOCETA*

[SYNTHETIC BRISTLE]

—an important scientific discovery which makes possible synthetic bristle brushes as efficient as those made with high grade natural bristles.

—developed by Pittsburgh Plate Glass Company, Brush Division, laboratories after a 3-year research . . . produced exclusively by "Pittsburgh" . . . ready now!

—makes possible America's first full line of practical synthetic bristle brushes.

Two years before Pearl Harbor, Pittsburgh Plate Glass Company scientists were experimenting with synthetic bristle—trying hundreds of formulas—testing results. Their aim was to make this country independent of the Far East as a source of supply—to provide against the shortage of natural bristles that would inevitably occur in case of war with Japan.

As the nation's leading manufacturer of quality brushes, we considered it our responsibility to continue to supply high-grade brushes regardless of where the war might spread.

Our three years of research work have now been crowned with complete success. A new substance called NEOCETA has been developed. Extensive tests prove that "Pittsburgh's" Neoceta bristle brush performance is comparable with any pre-war brush.

Practical! Workable! Durable!

Neoceta bristle is tapered, giving it the necessary elasticity and "feel" of natural bristle. Spreading ability is entirely satisfactory. Neoceta brushes hold as much—*or more*—paint as pure bristle brushes—and rival them in durability and the character of the film they produce.

Here, in short, is a product that is very far from being a temporary wartime substitute. It is a great step forward in paint application practices.

Availability

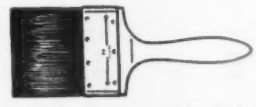
Winning the war comes first! Brushes of Neoceta are now available to the Army, Navy, or contractors for war materials for the Armed Services.

Bristle brushes, made and distributed in accordance with W. P. B. regulations, are also still available, with the necessary priority, through "Pittsburgh" branches everywhere.

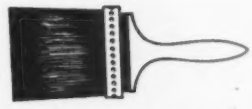
NEOCETA

Brushes Available Now

Metal Bound Flat Paint—Professional type. 4" width, 4" length clear.

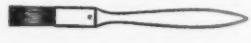


Metal Bound Flat Paint—Utility type. 4" width, 3¼" length clear.

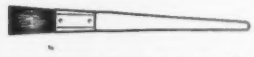


Leather Bound Flat Paint—Professional type. 4" width, 4⅜" length clear.

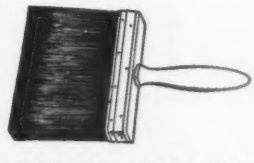
Flat Varnish—Utility type. 1", 2" and 3" widths, 2", 2½" and 2¾" lengths clear.



Touch-Up Flat Varnish—General work. ½" width, 1⅜" length clear.



Oval Sash—Sizes 4, 8 and 12. 1¾", 2¼" and 2¾" lengths clear.



Wall Coating or Calcimine—For use in resin emulsion paint as well as calcimine or oil paint. Size 5"x1½". 3¾" length clear.

*Trade Mark Reg. U. S. Patent Office No. 397,100

PITTSBURGH
PLATE GLASS COMPANY

NEOCETA brushes are manufactured by the creators of famous *Gold Stripe* brushes

• **FOR HIGH SPEED SAWING** STAR "MOLY"*—the original molybdenum alloy hack saw blade. You'll know it by its patented copper-color finish.

• **FOR DIFFICULT SAWING** STAR Unbreakable Special Flexible — the standard alloy blade that cuts like an all-hard, yet eliminates breakage and tooth strippage. Identify by all-over (patented) green finish.

TRADE MARK

CLEMSON BROS.
Incorporated
MIDDLETOWN, NEW YORK

**T.M. Reg.—Blades bearing the name "Moly" are made only by Clemson Bros., Inc., and affiliated companies.* 3820

(Continued from page 268)

Executive Order 9235, the Director of the Bureau of the Budget is authorized to "survey supplies and equipment in possession of Government agencies and the utilization thereof" and to "develop and promulgate such qualitative and quantitative standards with respect to supplies and equipment used by Government agencies as he may deem necessary." Opportunities for standardization present themselves in equipping and maintaining specified kinds of Government offices the care and maintenance of equipment, and in defining obsolescence. Economies possible through effective standardization in utilization of supplies and equipment by the Federal service have hardly been tapped.

Control of utilization should lead to a better knowledge of future requirements for specific items. Without projection and orderly assembly of requirements, procurement cannot be handled efficiently, and the advantages of consolidated purchasing cannot be fully realized. Federal requirements have been anticipated and consolidated for certain items in the past. The procurement function of many agencies, however, has been so decentralized that it has been difficult to gain a proper perspective. As the Bureau of the Budget develops fiscal controls, procurement officers will have more definite data relative to the Government's demand for given commodities. Advance knowledge of requirements will permit scientific determination of efficient methods of procurement for each class of commodity regularly used by Federal activities. Maximum utility per dollar expended, and a minimum of paper work consistent with safeguarding the taxpayers' dollar are goals for postwar Federal procurement.

* * *

MATERIAL CONTROL RECORD

(Continued from page 91)

at top of page per Line 1. The quarter to which it applies is shown on Line 3.

When the PD25A is returned from W.P.B. with rating authorizations and amounts of materials allowed, Lines 4, 5, 6, and 7 are completed. If, for example, 30,000

(Continued on page 272)

DIE-LESS DUPLICATING
The parts shown are typical of the variety of simple or intricate forms and shapes which can be quickly duplicated to a tolerance of .001" with DI - ACRO Precision Machines — Shears, Brakes, Benders. For experimental and research work or production runs, DI-ACRO Units form angle, channel, tube, rod, moulding wire, strip stock; shear stock sheets, trim duplicated stampings. With Die-Less Duplicating, Man Hours and Critical Materials are frequently saved. Send for 32-page Catalog—"Metal Duplicating Without Dies".
DI-ACRO PRECISION MACHINES
O'NEIL-IRWIN MFG. CO.
305 Eighth Ave. S., Minneapolis, Minn.
SHEAR
BENDER
BRAKE

WASMER *Tru-Fit*

NUTS & BOLTS
CAP SCREWS
SET SCREWS

WASMER BOLT & SCREW CORP.
13600 ATHENS AVE. CLEVELAND, O.

WeldELLS have everything ★

NO GUESSWORK HERE—

THE welder's job is *welding;* not fussing around to find a fitting of the right size and weight —or waiting for the other fellow to do it. And yet that is just what he's up against when he works with fittings that are not clearly identified. When such things happen it isn't surprising that the welder may "take it out on the job"—particularly when he's working against time as most everyone is today.

Anything can happen when unmarked or poorly marked fittings are used. The wrong size may be delivered, and not discovered until too late. A helper may lug a heavy fitting a long way from the stockroom, only to do it all over again.

But there's little chance of this sort of thing when the fittings are WeldELLS* or other Taylor Forge Welding Fittings. Every Taylor Forge Fitting wears its size and weight on its back—permanently marked so that it can be read ten years from now as well as it can today!

By eliminating the danger of using wrong thickness fittings, this feature ranks with the many features of WeldELLS that contribute to sound engineering design. And by simplifying and speeding up welding, it ranks with the many features that contribute to convenience and economy.

Yet it is just one of many reasons why WeldELLS are known as the fittings that have *everything*—everything *any* welding fitting has; some things that no other has.

TAYLOR FORGE & PIPE WORKS
General Offices & Works: Chicago, P. O. Box 485

● WeldELLS are just one of many Taylor Forge Products that are vital to war and victory. An example is huge rolled steel rings—an important part of U. S. tanks now in action.

★WeldELLS alone have all these features

In addition to the feature described, they include:

▶ **Seamless**—greater strength and uniformity.

▶ **Tangents**—keep weld away from zone of highest stress—simplify lining up.

▶ **Precision quarter-marked ends**—simplify layout and help insure accuracy.

▶ **Selective reinforcement**—provides uniform strength.

▶ **Wall thickness never less than specification minimum**—assures full strength and long life.

▶ **Machine tool beveled ends**—provides best welding surface and accurate bevel and land.

▶ **The most complete line of Welding Fittings and Forged Steel Flanges in the world**—insures complete service and undivided responsibility.

* * *

* WeldELLS and many other Taylor Forge Products are produced in Byers Genuine Wrought Iron.

NEW YORK OFFICE: 50 CHURCH STREET • PHILADELPHIA OFFICE: BROAD STREET STATION BLDG.

When writing Taylor Forge & Pipe Works please mention Purchasing

FLEXPEDITE

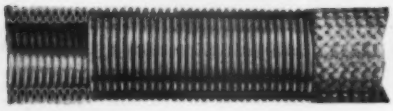
Your Conversion—Assembly—Production

with

REX-WELD

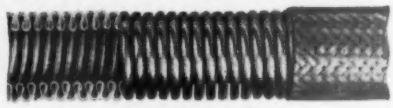
Flexible Metal Hose

Rex-Weld Hose—Annular Corrugations



RW-80 Unbraided — RW-81 Braided

Rex-Weld Hose—Helical Corrugations



RW-90 Unbraided — RW-91 Braided

General Data

	STEEL	BRONZE
Sizes	To 4" I.D.	To 4" I.D.
Pressures	To 14,500 p.s.i.	To 14,500 p.s.i.
Temperatures	To 1000° F	To 450° F.
Lengths	To 50'	To 50'

Use Chart

	*STEEL	BRONZE
Saturated Steam		✓
Superheated Steam	✓	
Sulphur Bearing Oil	✓	
Oxygen		✓
Ammonia	✓	
Carbon Dioxide	✓	
Sulphur Bearing Grease	✓	
Critical Vibration		✓
Non-Sparking		✓

Protective Coatings Can Be Applied for Corrosion Protection (To Conserve Critical Copper Bearing Alloys).

Couplings: REX-TITE Mechanical (Re-attachable) Couplings; Solder Couplings; Brazed and Welded Couplings and Flange Assemblies for Rex-Weld Flexible Metal Hose.

Ask for Engineering Recommendations

CHICAGO METAL HOSE CORPORATION

General Offices: MAYWOOD, ILLINOIS

Factories: Maywood and Elgin, Ill.

(Continued from page 270)

pounds of carbon steel were applied for and only 24,000 pounds allowed, this is shown on Line 4. Perhaps this firm uses carbon steel for three kinds of end use products and, therefore, W.P.B. allows 18,000 pounds on AA-1 rating, 4,000 pounds on AA-2X and 2000 pounds on AA-4. In such instances, two additional control pages are set up, one for the 4,000 pounds on AA-2X and one for the 2,000 pounds on AA-4. These are cross-referenced in section marked 6 so that upon reference to the control sheet, the priorities director knows at a glance how much of this item he can yet order on each rating.

If new orders require material not anticipated at the time the PD25A was filed, a new sheet is set up for materials requested under a PD25F and so marked at the top, Line 1.

We find that by the use of this system, we run no chance of violating our P.R.P. authorizations by ordering past the amount authorized.

All purchase orders issued are posted daily and all receiving forms and invoices for goods received are posted daily. This material control record is kept in a special material control ledger.

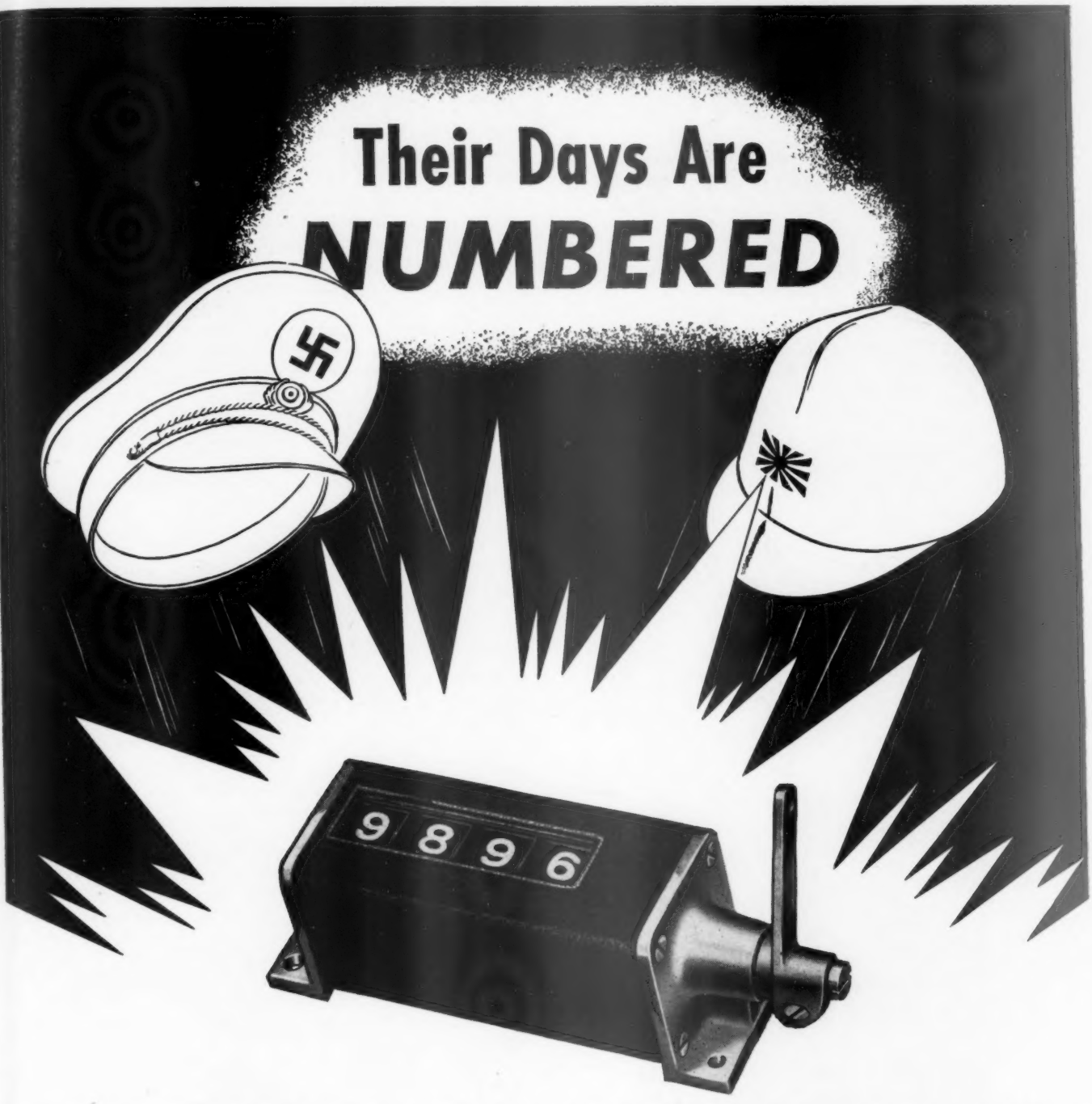
Where operating, maintenance, etc. are recorded on sheets duly set up for that purpose, entries are made in Column A-B-C-D and Lines 4, 6 and 7 in "dollars."

Duplicate tissue copies of all purchase orders issued are filed in a temporary priorities file until goods are received. When goods are received and invoice arrives, the amount invoiced, its number and date are entered on tissue copy of purchse order, then invoice goes to accounting department and tissue copy of purchase order goes to permanent purchase order priority file for that quarter, where W.P.B. checks can easily check same with material control record.

A perpetual inventory record is maintained in the office of the purchasing agent where complete control and knowledge as to materials required, amount on hand, amount being used, amounts ordered and available yet to order under rating authorizations, is easily accessible with a minimum of lost motion.

With the progress of the war effort and the shortage of labor and office personnel, it becomes more and more necessary to develop ways and means of saving time, eliminating lost motion and of systematizing to greater lengths, wherever possible.

Their Days Are NUMBERED



The faster your production machines turn up the numbers on Veeder-Root Counting Devices . . . and the higher these numbers run . . . the sooner the United Nations will knock the hats off the Axis. For these devices are an added help to your production men, in keeping on top of their jobs, by giving them a running report on the performance of each machine and process. They can see when a machine is behind schedule, and speed it up into line . . . which means they can co-ordinate their departments more closely, so that final assembly is not held up by a shortage of individual parts or sub-assemblies. They can tighten up on traffic schedules and, in many cases, improve quality where it depends on constant speeds.

If your work counts in the war effort, you can count on Veeder-Root. There are electrically and mechanically operated devices for every type of machine in your plant . . . quick and easy to install . . . to count in any terms or units of performance you require. Write.

Veeder-Root Inc.

HARTFORD, CONN.

OFFICES IN Boston, Chicago, Cincinnati, Cleveland, Detroit, Greenville, S. C., Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Montreal, Buenos Aires, Mexico City, London. In England: Veeder-Root Ltd., (New address on request.) In Canada: Veeder-Root of Canada, Ltd., Montreal.

When writing Veeder-Root Inc. please mention Purchasing

Hotel Lexington

HOME OF THE FAMOUS

Hawaiian Room

● Just 3 minutes from New York City's Grand Central Terminal, The Lexington is centrally located. Its 801 outside rooms are all equipped with combination tub and shower bath, circulating ice water, full-length mirror, and four-station radio. *"New York's Friendly Hotel."*

Charles E. Rochester, Vice-Pres. & Mng. Dir.

ROOM RATES *European Plan*

One Person		Two Persons	*(Twin Beds)*
$4.50	$5.00	7.00	$8.00
Two Persons	*(Double Bed)*	Suites—Parlor, Bedroom and Bath	
$6.00	$7.00	*from* $15.00	

LEXINGTON AVE. AT 48 ST.
NEW YORK, N. Y.

Copper Scrap Shortage Acute

Only one-fifth of Copper Scrap Refining Capacity Now Idle

The United States depends upon scrap as the source for approximately 40% of its copper. Much of this scrap is usable by remelting and without further refining. Such items as copper wire are almost pure and can be used in place of virgin copper. The flow of this almost pure scrap, known as Number One and Number Two grades is diminishing so rapidly that the gap must be filled by other less pure grades which must be refined before they can be used.

Even greater shortages are being felt in these "less pure" grades requiring refining. These are termed "Refinery Brass" and "Copper-Bearing" Material. In appealing to industry for additional copper, brass and bronze scrap, WPB emphasizes that in December, 1942, scrap refineries received only 4,800 tons of these grades—*not enough to enable them to operate at one-fifth of capacity.*

Not only are we seriously short of all grades of copper, brass and bronze scrap, but the output of mined ores cannot meet demands because of manpower shortages. As in steel, the use of scrap makes possible speedier production as well as manpower and transportation savings.

To ease the scrap shortage, the Salvage Division, War Production Board, appeals to industry to make up a forecast deficit of 625,000 tons of refinery brass and copper-bearing materials in 1943. This amounts to approximately 52,000 tons a month more than the 1,000,000 tons collected in 1942.

This, then, is the goal WPB hopes will be achieved in 1943: A 62½ per cent increase in the flow of copper, brass and bronze. This will result in capacity operations of the nation's scrap copper refineries, ingot makers and refineries.

The 1,625,000 tons collected will produce approximately 1,000,000 tons of copper all of which will be used directly in the War Effort.

Most dramatic are those direct uses of copper in brass cartridge cases and in navigation and other precision instruments. Equally important, however, are the bronze gears and bearings so necessary to the machinery producing weapons of war. Numerous working parts of guns, tanks, ships, etc., are also made from copper-bearing bronze.

The electrical nerve-centers of ships, tanks, guns and planes depend entirely upon the conductivity of copper. In addition, not one generator or motor now in the War Effort could continue to operate if it weren't for vital copper parts.

Although copper scrap is No. 1 on the list of critical material shortages, iron and steel scrap inventories are diminishing rapidly. It is hoped that the double emphasis on both copper and steel scrap will increase the flow of each.

The copper and steel producers of the country look to their fellow industrialists for the raw materials which will enable them to meet demands through 1943.

* * *

RESIN FOR COATING SHELLS

Durez 175 is a 100% brittle phenolic thermosetting resin developed by Durez Plastics & Chemicals, Inc., North Tonawanda, N. Y., especially formulated for coating shells. It is said to be so tough that shells can be fired from the gun without causing the coating to disintegrate. Durez 50,801 is a viscous solution of a

The old axiom "necessity is the mother of invention" was never more true than *now!*

War has been a great stimulus to the manufacturing techniques, metallurgical knowledge, and methods of application of *stainless steel tubing.* Almost daily *new* problems are being solved in *new* ways . . . the versatility and adaptability of *stainless* even in its more fundamental grades, demonstrated beyond question.

What we're driving at is this:

Our war-born experience with *Pittsburgh Stainless* Seamless Tubing has proved that *grade specifications* don't mean a thing unless *all* the factors of application are known and correctly evaluated. Scarcity of higher alloy compositions does not necessarily preclude your use of stainless. With all the factors known, perhaps straight chrome analysis, made by Pittsburgh in a wide range of walls, and sizes up to 10¾" O.D., will *actually* be the best grade for your needs in the light of our advanced knowledge.

Why not find out by asking? Our engineers are eager to help.

PITTSBURGH STEEL COMPANY
1671 Grant Building Pittsburgh, Pa.

Pittsburgh Stainless STEEL TUBING

CLOSE TO THE FRONT
in New York

When you come to New York, save time and energy and make the Hotel Belmont Plaza your headquarters.

Ideally located in the heart of the East side, this fine hotel is within easy range of business and pleasure. Just three blocks from Grand Central, a few minutes' walk to Radio City, smart Fifth and Madison Avenue shops, theatres and leading business centers.

Each of its 800 rooms has both tub and shower, radio and full-length mirrors—all the comforts of home.

Two popular-priced restaurants serve delicious meals. For quick service, you'll like the Pine Room with its coffee shop prices.

Entertainment with dinner and supper dancing to popular orchestras.

Excellent banquet and meeting facilities.

HOTEL
Belmont
PLAZA

LEXINGTON AVENUE AT 49TH STREET · NEW YORK CITY

CARL F. JOHNSON, MANAGER
DIRECTION: EMIL H. RONAY

(Continued from page 274)

thermosetting resin at 55% solids content, which can be used in place of the brittle Durez 175. Both products when reduced with solvents produce films which bake smooth and tough and are unaffected by solvents and reagents.

WELDLESS CHAIN SUBSTITUTE FOR MANILA ROPE

To try to help industrial and civilian users of the smaller sizes of manila rope who may have remaining no usuable rope or who are using rope which is unsafe because of wear, The Chain Institute, Inc., of Chicago, Illinois, has just completed studying the proper substitution of weldless chains for manila ropes.

The Army, Navy and Maritime Commission's urgent need for manila rope was brought into sharp focus recently by an appeal from the War Production Board for all manila rope that can be spared "if it is 3/16 of an inch or more in diameter and 200 feet or more in length." The Government offered to pay 10 per cent above the owner's net cost, exclusive of freight charges.

Fortunately for civilian users of smaller size ropes —from 3/16 to ¾ of an inch diameter—hope for relief is now offered by the manufacturers of weldless chains.

The study made by The Chain Institute revealed that although capacity for the manufacture of welded chain is being taxed to the utmost to fill essential war demands, there does exist idle capacity for making weldless chain. This capacity, which under normal conditions meets civilian chain needs, has been partially idle for more than a year because steel was not available for weldless chain production.

The Institute then studied the breaking tests of weldless chains in comparison with manila rope, and prepared a table which brackets 10 ropes under 1 inch in diameter with the weldless chain that provides comparable strength for each.

For example: the smallest rope listed is 3/16". Manila rope in this size made to Federal Specification TR-601a has a breaking test of 420 lbs. and wartime substitute fibre rope a breaking test of 336 lbs. The comparable chains are Tenso Type (No. 3) with breaking test of 375 lbs., Lock-Link Type (No. 4) with a test of 405 lbs., and Niagara Type (No. 4) with a test of 420 lbs.

Similar convenient comparisons have been worked out for rope sizes ¼, 5/16, ⅜, 7/16, 15/32, ½, 9/16, ⅝, and ¾ inch. Copies of the chart are now available from chain manufacturers and hardware wholesalers.

The Institute also reports that fittings and attachments already developed and available for service with weldless chain make possible its adaptation to many uses previously handled by manila rope.

According to The Chain Institute, tremendous war-use demand for welded chain prevents additional manufacture of this type of chain to replace the larger sizes of manila rope. Welded chain is vital for a thousand and one uses by the Army, Navy and Maritime Commission, as well as in Industry, and there is no idle manufacturing capacity.

CHEMURGIC RUBBER

KemPol is the name of a chemurgic rubber being produced by the Sherwin-Williams Company, using neither critical equipment nor materials. The new product is made from inedible domestic drying oils. Though its tensile strength, elongation, and abrasion

(Continued on page 278)

Get That Saboteur!

Defective packing is largely responsible for war products arriving at destination in unusable condition. Defective packing is a saboteur that can ruin carefully manufactured products needed at the front.

Realizing the vital importance of efficient protection for war products in transit, foremost manufacturers in ever-increasing numbers select KIMPAK* Creped Wadding for this responsible job... KIMPAK is the remarkably resilient, soft, clean packing material that has won the confidence of manufacturers. For many years it has demonstrated its dependability by protecting countless peacetime products against shipping damage.

KIMPAK comes in rolls, sheets, pads and tubes in almost any desired size and thickness. It may be had in moisture *resistant* form as well as moisture *absorbent* form.

Make sure your products arrive in "fighting condition." Rid your plant of that destructive saboteur "Defective Packing"! Pack with KIMPAK. Save time and money in your shipping room.

For complete information about KIMPAK, mail coupon.

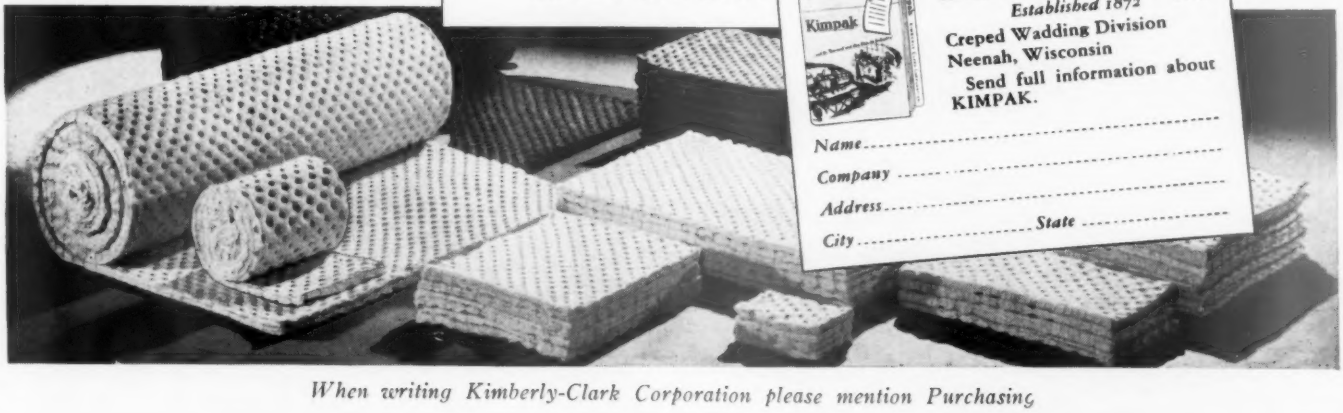
PACK WITH

Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

CREPED WADDING

*KIMPAK (trade-mark) means Kimberly-Clark Wadding



Kimberly-Clark Corporation
Established 1872 P-543
Creped Wadding Division
Neenah, Wisconsin
Send full information about KIMPAK.

Name .....
Company .....
Address .....
City ..... State .....

When writing Kimberly-Clark Corporation please mention Purchasing

(Continued from page 276)

resistance are not as good as actual rubber, the new product can be used for a variety of molded and extruded products such as treads, mats, pads, erasers, jar rings and other closures, gaskets and braided hose. Kempole is said to readily lend itself to emulsification, and has been used for fabric coating, tapes, adhesives and sealing compounds.

* * *

SYNTHETIC RUBBER PROGRAM

The current government synthetic rubber program calls for the production of varied types. By far the largest quantity is allocated to Buna S, which is to be used in the manufacture of tires for combat vehicles. Smaller quantities of the special-purpose rubbers will also be produced. Neoprene will be used chiefly for hose, tubing, packing and other products requiring high resistance to attack by oil; Butyl rubber, for hose, molded goods, belting, possibly balloon coverings, and, at a later date for civilian tires; Buna N-type rubbers, which have greatest resistance to petroleum, for bullet-proof gas tanks and hose; and Thiokol, which resists deterioration by acids and strong bases, for tank linings, packing and civilian tires.

Synthetic rubber research began as early as 1860, though satisfactory commercial products were not developed until recently. The starting point of early research was isoprene, which was isolated in 1860 from a distillate of natural rubber. In 1875 this was reconverted into a rubber-like mass, thus establishing a relationship that guided subsequent attempts at synthesis. In 1901 means were discovered for converting both butadiene and dimethyl-butadiene into rubber-like solids. During the first World War Germany produced

STASAFE

FACE and EYE SHIELDS

FOR MEN OR WOMEN!

PROTECT THE FACE AS WELL AS THE EYES from the HAZARD OF FLYING PARTICLES!

STASAFE Face Shields have proven invaluable in machine shops, foundries, on assembly lines, in aircraft plants—for protection against flying particles.

No. 5—WOMENS
Fibre Dome for Hair Protection. Full Length Front. Ratchet Headgear.

No. 9—WOMENS
Complete eye and partial face protection. Fibre Dome.

No. 7
With removable cellulose sweatpad. Elastic adjustable headband. Curvature of front may be adjusted.

No. 5—MENS
Full length front. Clear, green or amber. Ratchet headgear. Head protection of fibre.

No. 8
Adjustable elastic headband. Open top. Front covers eyes, upper face and forehead. Light. Popular with men and women.

CHECK THESE FEATURES:

- Non-flammable material.
- Fronts easily replaceable.
- Adjustable headbands.
- Clear, green or amber fronts.
- No's 5 and 9 provide hair protection so important to women.
- Raisable fronts.
- Wide range of styles.

STASAFE Face Shields are light and can be worn over goggles or prescription lenses without restricting the range of vision.

For Prices and Details Write to:

STANDARD SAFETY EQUIPMENT CO.

232 West Ontario Street
Chicago, Illinois

some 2350 tons of Methyl rubber, but the product was inferior and production was discontinued after the war. It was not until the 1930's that commercially satisfactory synthetic rubbers were finally produced, Neoprene being introduced by duPont in 1931 under the name of Duprene after six years of research. Thiokol made its appearance in this country about the same time. In 1933, Goodrich announced the development of Koroseal. After 1934 Germany produced the Buna S and Buna N products. In 1940, the Standard Oil Company of New Jersey acquired patent rights to the Buna rubbers. In the same year, Goodrich and Goodyear introduced rubbers comparable to the Buna products under the names of Hycar (or Ameripol), and Chemigum; and Standard Oil introduced Butyl rubber which possesses many of the physical qualities of natural rubber.

* * *

WOMEN WORKERS' HEADGEAR

In its research incident to the standardization of work clothes for women workers, the American Standards Association reports that one plant wisely permits the workers to choose from among three types of headgear —an adjustable beret, a pliofilm cap with a visor which also has a net section to assure coolness, and a button-on turban which cleverly fastens to avoid loose ends. All these have the essential safety features. Apparently, the pliofilm cap, which is attractive, light and practical, is the most popular model. A large part of its popularity is probably due to the added flattery it gives the wearer since hair styling can be seen through the transparent pliofilm. While every one acknowledges the necessity for safety headgear, no specifications exist

(Continued on page 280)

J. B. KENDALL COMPANY

Warehouses

Washington, D. C. — **1510 Eckington Pl. N. E.**

Norfolk, Va. — **122 W. Brambleton Av.**

BOLTS — NUTS

BUILDERS HARDWARE

HEAVY HARDWARE

STEEL — TOOLS

WIRE ROPE

IMMEDIATE SHIPMENT

WILL SHIP ANYWHERE

J. B. KENDALL COMPANY

Washington Phone **MIchigan 6310**

Norfolk Phone **NOrfolk 5-1514**

"BUY WAR BONDS"

Pan American

PAA

recommends

STEEL STRAPPING

In a recent bulletin PAN AMERICAN AIRWAYS gives this excellent advice to wartime shippers . . .

"Under the extraordinary conditions of war time, this company, like all transportation companies, works under abnormal conditions which are entirely beyond our control. Shipments must of absolute necessity receive more handlings than is usual, caused by storage while awaiting dispatch, possible off-loading from planes at intransit points to provide space for Government passengers and cargo under priority, and frequent transfer from one aircraft to another.

"The situation calls for the full cooperation of shippers, in their own interest. These unavoidable conditions will probably get worse before they get better, as the war progresses. This company, therefore, urges that shippers use greater care in packing to prevent damage to contents, and *use stronger containers that will stand extra handling.*

"Instead of extra heavy packing which is undesirable because it uses up valuable, much-needed weight space, use containers of sufficient strength, *supplemented by metal strapping . . .*"

Whether you ship by land, sea, or air, the Stanley Steel Strapping System will give your containers complete protection with minimum weight and bulk. It includes tools and accessories for every purpose. Write for details.

1843 STANLEY 1943

PROMPT DELIVERIES to Plants engaged in War Production

THE STANLEY WORKS

STEEL STRAPPING DIVISION • NEW BRITAIN, CONN.

Engineering Authorities specify DU-LITE for Engines

DU-LITE — will produce a highly satisfactory finish on most steels — soft, low carbon steel or heat treated parts of alloy steels.

DU-LITE — not only provides a durable, tough finish which is a protection against rust, but also colors the steel an attractive black.

DU-LITE — is an aid to lubrication. Processing smooths microscopic roughness and produces an oil absorbing — oil holding oxide surface. This combination definitely aids lubrication in closely fitted bearings. Extremely close tolerances are maintained, for there are no dimensional changes by the use of Du-Lite.

DU-LITE — representatives cover the industrial sections of the United States and are available for consultation on your specific problems. Write today.

DU-LITE CHEMICAL CORP.
MIDDLETOWN, CONNECTICUT

(Continued from page 279)

which define the vital factors to be incorporated.

There is said to be a great variety and much disagreement as to the best kind of safety cap. And here, more than with any other phase of the work clothes problem, feminie vanity must be taken into account. The prime purpose of all these types of headgear is to keep the hair from becoming entangled in moving machinery and to protect the head from dirt or oil mist. There are skull caps, snoods, pliofilm caps, nets, legion caps, berets, kerchiefs and turbans. However, milady finds fault with most of these hats—either they are ill-fitting or too hot, or unattractive.

SALE OF IDLE, EXCESS OR FROZEN MATERIALS

Priorities Regulation No. 13, dealing with the sale of idle, excess or frozen materials by persons who are not regularly engaged in the business of selling such materials, has been amended by the War Production Board further to tighten control over materials.

One of the principal changes was to put various government agencies, such as the War and Navy Departments, the Board of Economic Warfare and the Maritime Commission, and persons buying for their account, on the same basis as other users and purchasers. Previously the regulation provided that sales might be made freely to such agencies.

The change resulted from the fact that the general control of critical materials is now more stringent than it was last July, when the regulation was first issued.

Also, the regulation created an artificial distinction between manufacturers who work on government-owned materials and those whose product is made for the services, although ownership does not pass until the end product is delivered. This distinction now is removed.

Sales to certain government corporations, such as the Commodity Credit Corporation, Defense Supplies Corporation, Metals Reserve Corporation, and Rubber Reserve Company, for stockpiling purposes still are permitted.

The revised regulation continues to allow sales to users on specified ratings except in the case of materials which are particularly scarce and where there is a close allocation, such as aluminum, chromium, several forms of copper, pig iron, nickel, steel rails, tin, vanadium, rubber, plywood, raw silk and various chemicals. Obviously, any manufacturing establishment operated by the Armed Services would have high ratings.

Reference to the sale of scrap has been omitted from the revised regulation since there are specific orders covering scrap in those cases in which one is considered necessary. It was felt that the inclusion of such a provision was more confusing than helpful, as it is only in very unusual instances that the regulation could apply to such transactions.

Also excluded from the scope of the revised regulation are foods and the various fats and oils which are now under the jurisdiction of the Department of Agriculture, and certain petroleum products under the jurisdiction of the Petroleum Administration for War.

A provision has been added to the regulation authorizing the sale of any controlled material to fill an authorized controlled materials order. Before July 1, the effective date of the requirement that controlled materials be sold only on authorized controlled mate-

(Continued on page 281)

rials orders, the regulation will be further revised to conform.

Retained in the revised regulation is a provision requiring reports of sales of materials which have been previously reported to Copper Recovery Corp. and Steel Recovery Corp. as idle or excess. The purpose is to insure that the national inventory of idle and excess materials can be kept on a current basis, and, thus, be made useful in the redistribution program.

DEVELOPMENTS IN PLASTICS

Du Pont Company's new plastic Cavalon is a synthetic resin which coats upholstery fabric, meeting Federal specifications for use in seats for tanks, trucks,

(Continued on page 282)

Exact Weight Scales

High Speed Scales for Industry . . .

EXACT WEIGHT Scale Model 271M . . . all duty end tower model for many weighing operations. By removing scoop and counterbalance you have a high speed checkweighing model . . . Accurate to ⅛ oz.—capacity to 12 lbs.

War time Industrial America work with precision tools of which scales are vital. For over a quarter of a century EXACT WEIGHT Scales have been the leaders in the field of pre-determined weighing and 50,000 corporations, companies and individuals in more than 53 major industries have been our users. If the operation is weighing EXACT WEIGHT can do it.

Write for detail for your particular operation.

The Exact Weight Scale Company
122 W. Fifth Ave., Columbus, Ohio

THERE IS NO SUBSTITUTE FOR EXACT WEIGHT
INDUSTRIAL PRECISION SCALES

Immediate Shipments of

BARS-PLATES SHAPES-SHEETS

From Stock

We also offer —

Quick shipments of flame-cut plates in irregular shapes, circles, discs, etc.

DAVID SMITH STEEL CO. INC. 234 46th St. Brooklyn N.Y.

For wire or lug insulation or as conduit, specify one of the following Fibronized Tubings which meets your requirements:

TRANSFLEX—This plastic tubing does not become brittle and shatter at temperatures as low as —58 deg. F. As a result, it meets the requirements of the Army and Navy where resistance to brittleness is a factor. Its transparency simplifies the identification of the wiring which it protects. The unusual elasticity and thin wall of Transflex permit it to stretch over splices, lugs, and other projections.

Dielectric strength (20 mil wall thickness)—Dry—850 VPM
Wet—815 VPM

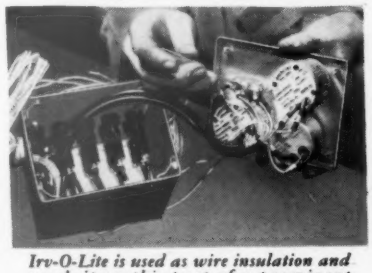
HYFLEX—has the same physical characteristics as Transflex; but is manufactured in six opaque colors: black, yellow, white, red, green, and blue.

IRV-O-LITE—Because of its high dielectric strength, this tough, thin-walled tubing saves space in intricate and crowded installations. Rubber-like, it can be flexed on itself with wire inside without cracking. Irv-O-Lite is resistant to heat, concentrated acids and alkalies, denatured alcohol, gasoline and other petroleum solvents. Obtainable in black, yellow, white, red, green and blue.

Irv-O-Lite is available in two types: For general, all-around use, XTE-30 is recommended. XTE-130 is better fitted for applications where higher temperatures are encountered and where greater dielectric and tensile strength are required.

Other Fibronized Products

Irv-O-Flex — an extruded plastic tubing developed for flexibility and resistance to brittleness at extremely low temperatures (—70 deg. F.).



Irv-O-Lite is used as wire insulation and conduit on this part of a prominent military plane.

Combination Marker-Insulators — marked short lengths of plastic tubing which do a double job of identifying wires and insulating lugs.

For more information about these products and for samples, please write Dept. 76

Irvington

VARNISH & INSULATOR COMPANY
IRVINGTON, N. J., U. S. A. • PLANTS AT:
IRVINGTON, N. J. & HAMILTON, ONT., CAN.
Representatives in 20 Principal Cities

A Tribute... and a Responsibility

When the men and women of Stanley Electric Tools, Division of The Stanley Works, received the Army-Navy "E" award on February 13, it was a much prized tribute to a great production team during the one hundredth anniversary year of the Company.

Upon their shoulders has rested a triple burden. They have been called upon to supply (1) tools for the armed forces . . . to construct and maintain camps, bases, and barracks; (2) tools for war industry . . . to build plants, ships, planes, and other implements of war; (3) tools for the home front . . . to maintain farms, schools, institutions and essential civilian industries.

Hand in hand with this honor for past performance goes a great responsibility for future performance. These men and women fully realize this responsibility. Far from being contented with the "contribution to Victory" already made, they are earnestly striving to make an even greater contribution in the future. Stanley Electric Tools, Division of The Stanley Works, New Britain, Connecticut.

1843 STANLEY 1943
TRADE MARK

(Continued from page 281)

airplanes, ships and other war products—a substitute for rubberized upholstery fabric.

Detroit Gasket & Mfg. Company is reported to have developed a flexible thermoplastic jar sealing ring which substitutes for rubber. The Department of Agriculture and various packers have thoroughly tested the new product. It is said to withstand temperatures up to 275 deg. F., and to close better than rubber for it tends to lock itself at 150 to 175 deg F. Though it is resistant to weak acids it cannot be used with oil preparations.

American Viscose Corp. has developed a vinylite resin yarn for use in products heretofore made of rubber yarn. It is said to be elastic, unaffected by body acids, and superior to rubber in withstanding the effects of sunlight, tropical heat and humidity. The yarn is reported to be a suitable rubber substitute for elastic webbing, suspenders, brassieres, tapes and cord, and even surgical stockings.

Du Pont Cel-O-Seal bottle caps are being used to cover openings in tubes; pipes and other aircraft materials which must be kept free of foreign substances. Shipped in solution, the cap dries and shrinks to fit the tube exactly when exposed to the air.

MAGNESIUM—USES AND OUTLOOK

The tremendous war demand for magnesium, as in the case of rubber, is creating a new industry. A program is under way to construct facilities capable of producing almost 100 times our 1939 output. The development of satisfactory non-magnesium incendiary bombs has reduced the capacity goal below the original figure of 725,000,000 pounds.

When the construction program is completed, about 15 plants will be in operation. In 1940 there was only one—the Dow Chemical Co. plant at Midland, Mich. Most of the plants will employ essentially new processes or will utilize new raw material sources.

Magnesium has been a relatively unfamiliar and unimportant metal until recent years, despite the abundance of domestic magnesium-bearing materials. During World War I, small quantities of magnesium powder were produced for use in incendiary bombs, star shells, and tracer bullets. Production declined immediately after the war but recovered in the 1920's and continued to advance in the 1930's. Interest in the potentialities of magnesium was increased as improvements were made in methods of alloying, surface treatment, casting, forming and drawing, and welding.

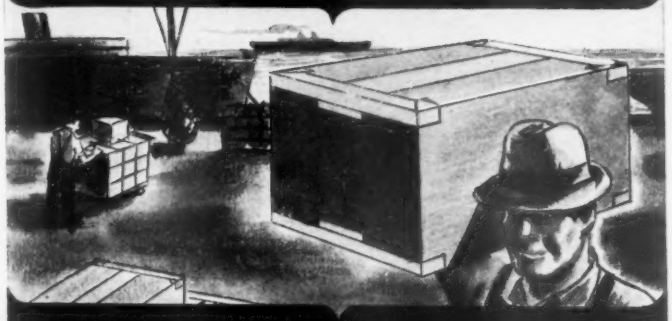
Since magnesium is 35 percent lighter than aluminum and is very strong in alloy form, it is an ideal material for use in aircraft. Alloy sand castings, sheets, structural shapes, tubing, forgings, and die castings are employed in interior fittings, motors, propellers, wings, wheels, and other aircraft parts. Magnesium also finds uses in portable machine tools, textile equipment, typewriters and other business machines, vacuum cleaners, electric motors, and automobile engines. A recent tractor model had a magnesium engine hood, control quadrant, instrument panel, radiator shell, and grill unit. Magnesium in powder form is used in photography, in metallurgy, and in the manufacture of electric light bulbs and radio tubes.

There is as yet no unanimity of opinion on the merits of the various processes. Indeed, new methods being developed in pilot plants may prove more efficient than those already in commercial operation.

After the war a substantial part of the new industry

(Continued on page 284)

ORANGE CORE
Sealing Tape
HELPS DELIVER THE GOODS ON THE WAR-FRONT... ON THE HOME-FRONT



• Whether you make war or civilian goods, speed in the shipping room and safety in transit are all-important. And that's precisely why Orange Core Sealing Tape is the continued specific choice of manufacturers all over the country. Now, when time and safe delivery mean so much, they find its speedier, stickier, sturdier superiority a real boon. So don't use just any tape. Make it a point to insist on Orange Core—America's Most Popular Brand.

Moore & Thompson Div. Hudson Pulp & Paper Corp. • 220 E. 42nd St. N. Y. C.

THIS MAN IS A MODERN WORKER and SO IS THIS ONE!

Both are using Amesacks to speed production. These industrial bags are now used to systematize assembly work, as well as to streamline shipping and mailing. Amesack parts bags and mailing bags save up to 90% of packing and crating time, and up to 50% of postage and packaging cost.

Write for **FREE SAMPLES**

★ ★ ★ JUST POP 'EM IN AND PULL THE STRING ★ ★ ★

AMES BAG COMPANY
1971 EAST 66TH ST. • CLEVELAND, OHIO

SIMONDS for GEARS
SINCE 1892

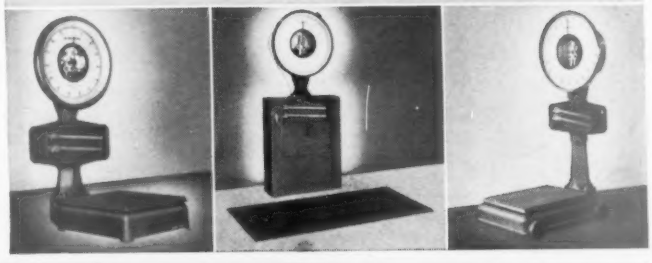
SIMONDS and Quality Gears — known for half a century. All types; cast and forged—steel, gray iron, bronze; also silent steel, rawhide and bakelite.

Write for information.

RAMSEY Silent Chain Drives and Couplings

THE SIMONDS GEAR AND MANUFACTURING COMPANY
25th and Liberty Sts. Pittsburgh, Pa.

KRON
DIAL SCALES
engineered for the job
THE KRON CO.
BRIDGEPORT CONN.



Immediate Service on all the Metal Working Lubricants you Need

D. A. STUART OIL CO.
LIMITED
2727 So. Troy Street,
Chicago . . . . Illinois

SERVICE OFFICES AND WAREHOUSES IN ALL PRINCIPAL METAL WORKING CENTERS. *Write for the address of one nearest you.*

THE PURE OIL COMPANY, *Chicago*

A COMPLETE LINE OF INDUSTRIAL PETROLEUM PRODUCTS
A Pure Oil engineer will help solve your lubrication problems. Write today.

PURE
BE SURE WITH PURE

5 STAR EDITION ★★★★★
WASCO NEWS
5 STAR EDITION ★★★★★
W-S Line of Forged Steel Fittings Meets Wide Range of Needs
The complete line of Watson-Stillman Forged Steel Fittings includes Screw End Fittings and Socket Welding Fittings — 90° Elbows, Tees, 45° Elbows, Crosses, Street Elbows, Laterals, Couplings, Reducers, Bushings, Caps, Plugs, and Unions. These products are made from solid steel billets by manufacturing methods which insure uniform wall thickness, maximum wall strength and absolute concentricity. Bulletin A-3 describes and illustrates the complete line.
New Valves Recently Added to the W-S Line
Specially designed for hydraulic service, Watson-Stillman high-pressure valves are now supplied in several types never before furnished. Many former W-S Valves have been redesigned and engineering improvements introduced. Retained from previous models are features developed throughout the manufacturer's near-century of hydraulic experience. The line is described and illustrated in a recently-published Bulletin A-4.
W-S Hydraulic Jack Line Features "Double Diamond" Quality
Among the first Watson-Stillman products to be manufactured as a standard item, hydraulic jacks now appear in a redesigned line offering the high quality always associated with the W-S "Double Diamond" Trade Mark. Included in this line are Independent Pump Hydraulic Jacks, Vertical Outside Pump Hydraulic Jacks, Horizontal Outside Pump Hydraulic Jacks. Bulletin 710-A gives factual information on this line.
5 STAR EDITION ★★★★★
WASCO NEWS
5 STAR EDITION ★★★★★
Complete Hand Pump Line Draws on W-S "Know-How"
Designed and built to operate jacks and other small hydraulic tools and machines, Watson-Stillman Hand Pumps are backed by an experience of 95 years in the manufacture of hydraulic equipment. This line includes Single Plunger and Double Plunger Hand Pumps and Pumps with large, medium or small tanks. Bulletin 240-A describes and illustrates W-S Hand Pumps, and is available on request.
fits the wartime tempo of speeding up production. Only a change of blade is required to adapt W-S Hand or Hydraulic Wire Rope Shears for cutting flat bar iron or round iron. All parts of W-S Shears are interchangeable. Additional information is furnished in Bulletin 740-A.
THE WATSON-STILLMAN CO.
ROSELLE, N. J.
★ ★ ★ ★ ★ ★
Buy U. S. WAR BONDS
W-S Hand and Hydraulic Shears Cut Fast and Clean
The adaptability of the Watson-Stillman line of shears for fast, clean cutting of iron bars as well as wire rope and steel cable
SEE YOUR MILL SUPPLY HOUSE ABOUT THESE W-S PRODUCTS
PLEASE SEND ME
THE WATSON-STILLMAN COMPANY
ROSELLE, N. J.
Further information on ☐ Fittings (Forged Steel), ☐ Valves (Globe and Check), ☐ Hydraulic Jacks, ☐ Hand Pumps, ☐ Wire Rope Shears.
Name
Address
City State
WATSON-STILLMAN
Distributor Products Division
Engineers and Manufacturers of Forged Steel Fittings, Valves, Wire Rope Shears, Pumps, Jacks and Hydraulic Machinery and Equipment.
For Victory ••• Let's all be Scrappers
3841

(Continued from page 282)

will probably continue in operation. If the price is sufficiently reduced as production processes improve, magnesium may be able to compete effectively with aluminum, steel, plastics, and plywood. It is generally agreed that more magnesium will be used in aircraft, since its lightness permits the substitution of payload for some of the deadweight of the plane. It is also likely that magnesium will be used in automobiles, busses, and trains.

PLASTICS VERSUS METALS

Plastics are not going to put metals out of business—as some Sunday feature writers would have you believe says Monsanto Magazine. Both groups of materials are cast for leading post-war roles in what we all hope will be a bright new world. Both have their own, unique advantages.

Plastics, for example, are marked by high resistance to chemical and atmospheric attack. They are light. They have excellent electrical insulating values and many desirable thermal properties. They offer a range of integral colors practically as wide as the spectrum, and many forms are transparent, translucent or opaque as the customer specifies. They can be molded into intricate shapes that require little, if any, finishing. They are warm and friendly materials to touch.

On the other hand, no molded plastics have yet been developed that equal metals for surface hardness, heat resistance, rigidity or structural strength per unit of area. Conventional molding methods require expensive molds and high heat and pressure limiting them to production of relatively small objects in relatively large quantities.

In short, there will be many a postwar job where metals will be a clear and obvious first choice.

There will be many other postwar jobs which logically call for plastics.

There will also be many occasions when plastics and metals will work together on the same job.

And there will be other times when a materials engineer will be hard put to make a choice.

CLAIMS SHEET BOARDS ARE SUPERIOR TO METAL FOR DUCTS

How sheet board ducts and casing are being used in air conditioning installations to save huge quantities of critical metal, was described recently by T. M. Cunningham, construction manager of Carrier Corporation, Syracuse, New York.

Stating that American ingenuity has again proved itself in producing a substitute for a critical material, Mr. Cunningham points out that while the new sheet board does not entirely replace sheet steel, so great is its application that a recent duct system installation estimated at 300,000 pounds required only 66,000 pounds of sheet metal. Sheet boards were substituted for the remaining 234,000 pounds.

"In selecting a sheet metal substitute, several factors must be considered," he states. "These include availability of substitutes, ease of fabrication, strength and durability of finished duct or casing, rigidity of material, and surface resistance to air flow.

"In addition to these factors, the substitutes for sheet metal must meet the following requirements: They must have a hard, smooth finish, and be non-hygroscopic, non-warping and non-inflammable. Preferably the material should be workable with tools usually used for

(Continued on page 286)

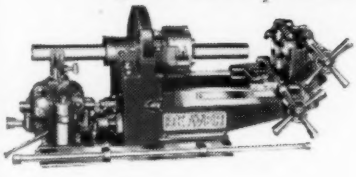
NO BLUE PRINT IS EVER COMPLETE!

Unlike a wax record, a blue print has to be *interpreted*. Some one with an engineering mind and a background of experience must visualize the end use of the product. Here at "Newton" this has always been standard practice. This was a potent aid in building up a nationally known business in screw machine products during peace times. It is now a definite asset in handling difficult war contracts. Although our schedules are rather full, if you need screw machine products up to ¾" size, please get in touch with us . . . just in case there might be an open spot.

NEWTON SCREW MACHINE PRODUCTS

THE NEWTON MANUFACTURING CO., PLAINVILLE, CONN.

The A-B-C of Pipe and Bolt Machines

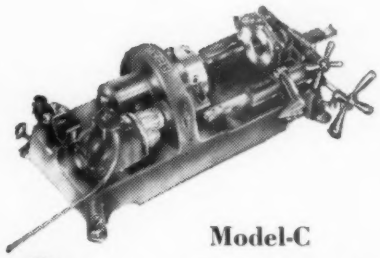


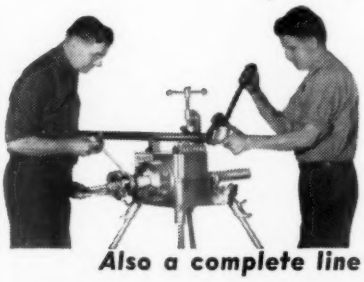
Model-A

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range ⅛ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, ¼ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range ⅛ to 2-inch—up to 8-inch with drive shaft and geared tools. Bolts up to 1½-inch. Weight 280 lbs. Ask for Bulletin-B.





Model-C

A sturdy little Power Unit

Converts Hand Pipe Tools into Power Tools from ⅛ to 8-inches. Threads 8-inch in 5 minutes. Threads bolts up to 1½-inch. Equipped with automatic chuck wrench ejector—a safety feature. Two men can use it at the same time without interference. Easily portable—weighs about 150 lbs. Write for Bulletin-C.

Also a complete line of hand tools.

BEAVER PIPE TOOLS

543 GROW AVE., WARREN, O.

to HOLD machine set-ups

ALLEN Products stand up to the stresses in war-driven machines *and* die assemblies. They hold parts together *"under fire"*, — preserve the strength and unity of each assembly. . . The well-informed Purchasing Official needs a handy, charted reference to Allen SPECIFICATIONS. 10-page Bulletin *awaits your request:* — includes standard dimensions of Allen Hollow Set Screws, Square Head Set Screws, Socket Head Cap Screws, Flat Head Cap Screws, Socket Head (*"Tru-Ground"*) Shoulder Screws, "Tru-Ground" Dowel Pins, Hexagonal Keys, Hollow Pipe Plugs. Send today for this Data-Bulletin *up-to-date!*

ALLEN Products sold only through local Allen Distributors.

THE ALLEN MFG. COMPANY

HARTFORD, CONNECTICUT, U.S.A.

TANGLEFOOT "16"

TANGLEFOOT "16" Kraft Construction Tape was developed particularly for the fibre container industry.

★

TANGLEFOOT "16" originally accepted in desperation and with misgivings, is now acclaimed with enthusiasm.

★

TANGLEFOOT "16" can solve many production problems for you, too.

★

Current shortages suggest an early investigation. Just tell us the roll size you want and a sample will be sent promptly. Diameters: 15", 17", 21" and 23".

FOR VICTORY Buy War Bonds

Made by
THE TANGLEFOOT COMPANY
GRAND RAPIDS, MICHIGAN

Sold by
THE WESTON PAPER AND MANUFACTURING COMPANY
DAYTON, OHIO

(Continued from page 284)

sheet metal work so that the construction of the sheet board ducts will not involve a retooling program."

Listing Asbestos Ductboard, Asbestocite, ARA Board, Transite, Masonite and Hard Board as among the well known substitutes that meet these requirements, Mr. Cunningham said: "These boards, and numerous others available, have several advantages over sheet metal used in ducts. They are more rigid so do not require the "cross-breaking" that is used in metal ducts. They have higher insulating value so the Btu loss or gain is less than in sheet metal ducts."

From experience in using the metal substitutes it is believed that 3/16" thick sheet board may be used throughout for some air conditioning systems, especially those ranging in size from 10,000 to 50,000 cfm. By using only one thickness for an entire duct system, the Carrier construction manager points out, fabrication costs are reduced and tooling problems are simplified, resulting in lower installation costs. In systems larger than 50,000 cfm, it is advisable to use ¼" board to eliminate stiffening and other construction "extras".

The surfaces of the substitutes are not so smooth as that of sheet metal. Therefore, the resistance to air flow of the sheet board duct is greater. However, it is not sufficient to make necessary a larger duct to compensate for the increase in resistance. A square vaned elbow, and other "fittings" may be made in sheet board ducts. The layout of the air conditioning system does not differ from that which has long been the practice in the industry.

Mr. Cunningham believes the use of sheet board ducts will probably continue after the metal shortage no longer exists.

* * *

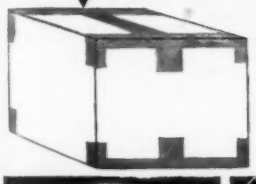
Leadfoil Packages Waterproof and Airtight

One of the most interesting of the changes in processes which have been brought about by wartime necessity and one which promises to remain with us when the war is over is the result of the development of lead foil materials for packaging. Although the prime reasons for research into this field were for the purpose of conserving steel, aluminum, tin and other metals, savings in weight, shipping space and cost have been great enough to indicate that many types of lead foil packages will continue to be used even when rigid containers are again available.

The newly developed lead foil packages are said to be substantial and economical while retaining the advantages of waterproofness and airtightness. They are being used as shipping and storage containers for rifles, machine parts, optical instruments, radio parts, cartridges, powder and detonators as well as foods, drugs, bandages and chemicals. The lead foil type package is especially adapted to use for emergency rations and medicines because of its light weight and ease of opening. Even cigarettes and matches are kept in lead foil coated envelopes by soldiers for protection against water and perspiration.

The most commonly used modern lead foil protected package is essentially a bag made of foil-coated kraft paper. The basic materials are lead foil, an asphalt adhesive and kraft paper. Over the lead foil may be cellophane, bond paper, an additional layer of kraft paper or other material as required, suitable to the requirements of the material to be packaged. Usually the cellophane is covered with a special thermoplastic

(Continued on page 288)

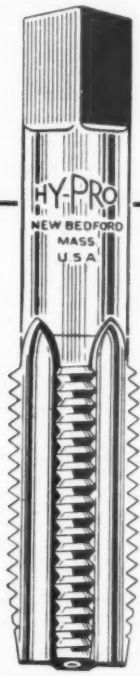


Never before have shipments been so valuable nor shipping conditions so hazardous. The rugged strength of SAFETEX GUMMED TAPE—its tremendous power to take hold and hang tough — insures every container a safe delivery.

Made by CENTRAL PAPER COMPANY, MENASHA, WISCONSIN.

SAFETEX
HERRINGBONE GUMMED
GUMMED TAPE

HY-PRO



TAPS

High Speed Steel

HAND and MACHINE SCREW TAPS

Cut Thread; Commercial and Precision Ground Thread Taps. Special Ground Thread Taps.

HY-PRO Taps Have Clean, Sharp, Accurate Threads for High Production

BUY MORE WAR BONDS

HY-PRO TOOL CO.

475 Mt. Pleasant St., New Bedford, Mass.

Send for Catalog on Company Letterhead

Today's PAGE wire production goes wherever the needs of war direct it—as it should be. . . . But you will find it good business to discuss with PAGE now—or any time—your plans for after-war production.

GENERAL WIRE

Spring Wire, Bond Wire, Telephone Wire, etc.

SHAPED WIRE

Stainless Steel. Carbon Steel. Half-round, oval, triangle, hexagon, octagon, flat, keystone, etc. Diameters to 3/8". End section areas to .250 sq. inch.

WELDING WIRE

Stainless Steel in analyses and diameters of such broad range that it is easy to choose from them the correct electrode for any Stainless Steel welding. A complete line of electrodes for welding all other steels. PAGE welding electrodes are handled by your local PAGE Distributor.

Wire always has been the business of PAGE. You will find us well equipped to work out your plans with you.

PAGE STEEL AND WIRE DIVISION

Monessen, Pa., Atlanta, Chicago, New York, Pittsburgh, San Francisco, Portland

In Business for Your Safety

ACCO

AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT • CONNECTICUT

WE SPECIALIZE IN

1 thing

–VARIETY

Because Harshaw is supplying hundreds of different chemicals for hundreds of industries, many purchasing agents, chemists and other buyers of chemicals who are familiar with our facilities and services are saving valuable time these two ways:

1. They are saving time—and you can too—by contacting Harshaw first when starting to search for a particular kind or grade of chemical. You'll find Harshaw's extremely wide selection includes hundreds of commonly-used chemicals as well as those which are frequently considered specialties. If, by chance, Harshaw can't supply the ones you want, very probably we may be able to tell you who can.

2. When you are in a hurry for a pound of chemicals to run a laboratory test, or for a carload of chemicals to use in your production, you can depend on Harshaw to save time by expediting your order—all the way to your dock, if necessary.

For your convenience, the 32-page booklet illustrated above contains a representative list of the commodities Harshaw has been supplying, together with the addresses and phone numbers of Harshaw branches and representatives. Copies are free for the asking.

HARSHAW

THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland, Ohio
BRANCHES IN PRINCIPAL CITIES

(Continued from page 286)

coating which will seal the package upon the application of heat. Although the lead is quite thin, it is sufficiently ductile to withstand folding without breaking and it forms a vaporproof, waterproof closure which will also exclude vermin and bacteria.

Other types of containers such as cannisters made of fibre laminated with lead foil are available. Some dehydrated foods for civilian consumption have appeared wrapped in lead foil type packages and are on dealers shelves today.

"AS TO RED TAPE"

Under the foregoing heading, the following editorial appeared in a recent issue of the Fargo, N. D. Morning Forum:

"Recently, *Purchasing* magazine, the national organ of purchasing agents, began an investigation of Government red tape. It decided that the red tape that is delaying military procurement originates in the general accounting office. This office is headed by the comptroller general and one function, when it was established, was declared among other things, to be to prevent waste and fraud in purchasing activities. The magazine says that it has surrounded Government purchasing with so many safeguards that nothing can move along speedily. Of course, the magazine was thinking specifically in terms of the purchasing agents which it serves.

"In amplifying its findings, the magazine says: 'Red tape is a state of mind as well as a method of procedure. With the threat of auditing and accounting technicalities outweighing actual results, that state of mind promptly pervades the whole war program. Contracting and disbursing officers play safe by documenting every move and amassing complete evidence in their own departmental files—at the expense of tedious procedures and multiple duplicate copies and signatures— to satisfy this state of mind and clear their own record.

'When the sheet is torn from this spectre which hovers over our whole war production program we find underneath it all nothing more or less than an adding machine, with figures for a brain. The adding machine may measure dollars, but it has no sense of values, and a sense of values is one of the things we most urgently need in adjusting our national economy to the demands of today.'

"Well, anyway, this is the magazine's definition. **Be this as it may, we should like to see a reply by the general accounting office."**

PLASTIC PRINTING PLATES SAVE COPPER

That a considerable quantity of electrolytic copper may be saved for essential war purposes through the increasing use of plastic printing plates, was revealed in a study recently conducted by the Conservation Division of the War Production Board for the Printing and Publishing Division.

It has been demonstrated that plastic plates are entirely satisfactory for short runs; that is, up to 50,000 impressions from flat plates as used in form printing. It is therefore reasonable to asume that this will also hold true for book work in those cases where a greater number of impressions is not required.

Plastic plates are comparatively light in weight, about one-eighth as heavy as a similar size electrotype. When it is considered that the duplicate plastic plates, from which stereotypers' mats are made, must often be shipped

(Continued on page 290)

PROMPT SHIPMENT
Especially on Smaller Sizes
CAST-LAP FLANGES
"K" inspected cast fittings in sizes up to 24". All standard and many special types... unions, elbows, tees, bends, crosses, companion and Cast-Lap flanges, etc.
Ample facilities and raw stock to meet all demands. Especially fast service on screwed and drainage fittings.
Cast-Lap flanges to replace the more critical material, steel. Get catalog for file.
Combined marketing facilities on both "K" cast iron and M. I. F. malleables. Stocks of both at Dayton, Ohio and Branford, Conn.
KUHNS BROS. COMPANY
DAYTON, OHIO

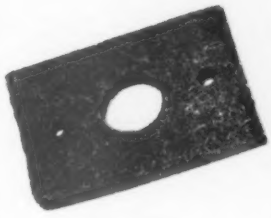
Output Increased with TUBULAR RIVETS
Don't use solid rivets — use tubular rivets with Chicago Automatic Rivet Setters, because tubular rivets with Chicago equipment speed up production and lower unit costs. Get all the facts, especially on your war products. Even though small solid rivets are specified, send us sample assemblies so that we can fasten them with proper tubular rivets and give you a production schedule. Then submit the tubular riveted assembly for governmental approval and you will invariably receive an O.K.
A typical fast operating machine that automatically feeds, inserts and clinches a tubular or split rivet with each pedal operation. Other machines available for setting up to 4 rivets at a time — bench and pedal types.
Chicago Rivet AND MACHINE CO.
9607 W. JACKSON BLVD., BELLWOOD, ILL. (Chicago Suburb)
TUBULAR AND SPLIT RIVETS IN ALL RIVET METALS

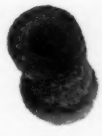
● When the pressure is on for production of a vitally needed war product . . . and a shortage of conventional materials blocks progress . . . FELT in one of the many forms developed by Western may provide the answer.

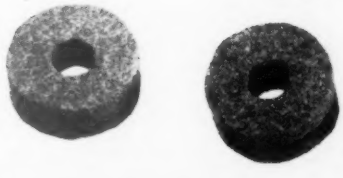
Particularly is this true where the job demands insulation, resiliency, sound deadening, flexibility, compressibility, resistance to water and many other properties of rubber.

On any problem involving the use of felt . . . or the substitution of this material for another . . . draw freely on the extensive background of Western Felt's 42 years' experience in fabricating felt to close specifications.

WESTERN FELT WORKS
Chicago, Ill.: 4035-4117 Ogden Ave.
Detroit, Mich.: 420 Stephenson Bldg.
Branch Offices in All Principal Cities







The Acadia Synthetic Division of Western Felt are processors of Plastics (Sheets, Extrusions, Tubings, Molded Parts) and Synthetic Rubber Write for information.

WESTERN Felt
Largest Independent Manufacturers and Cutters of Hair, Wool and Jute Felts

EXTRUDED PLASTICS, Inc.
New Canaan Avenue Norwalk, Conn.

TULOX *Seamless*
REG. U.S. PAT. OFF
PLASTIC TUBING
Made to close tolerances from a number of base resins . . . in a full range of sizes from 3/16" to 2½" O.D.

TULOX
REG. U.S. PAT. OFF
HOLLOW ROD
made from Tenite II
HEXAGONAL • KNURLED • ROUND

NATIONAL DISTRIBUTION—Immediate shipment from warehouse stocks for War Production. Illustrated catalog will be mailed on request of EXTRUDED PLASTICS, Inc., Norwalk, Conn.

In Canada: Sole Licensees, **DUPLATE CANADA, LTD.**
Plastic Division, Oshawa, Ontario
Export Dept: AMERICAN STEEL EXPORT CO., INC.
347 Madison Avenue, New York, N.Y.

(Continued from page 288)

great distances, the saving in shipping weight is definitely worth while.

The United States Government Printing Office both makes and uses plastic plates and also purchases plates from outside sources. Some private printing establishments make their own plastic plates. There are well established commercial plate makers in New York, Illinois, Ohio, Alabama, Michigan, Tennessee and Wisconsin who can make them, and plants in other parts of the country are readily convertible to the process.

The plastic plate is a duplicate plate, like a stereotype or electrotype. An original such as copper or zinc photoengraving, a line cut or a type form is therefore necessary.

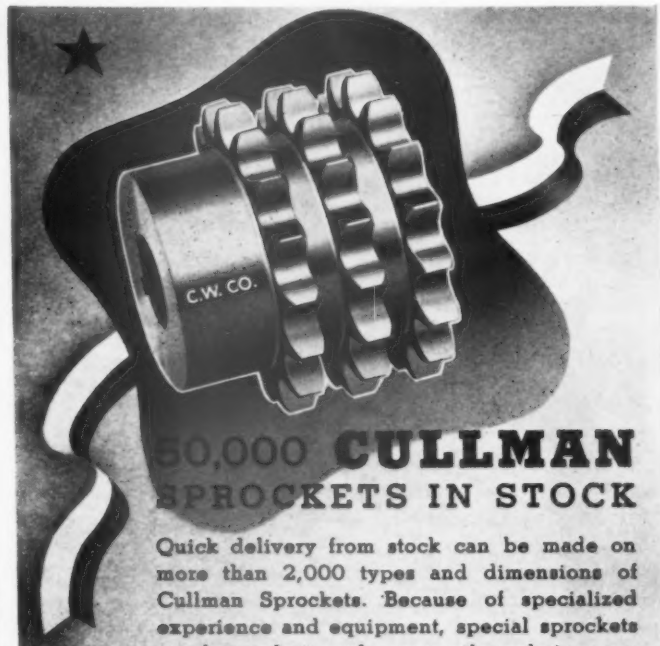
To make a plastic plate, a plastic matrix is first molded from the original. The process is similar to that of pressing a seal or signet ring into sealing wax. Copies of the plastic plate, from which printing is actually done or stereotype mats made, are then struck off the matrix in any quantity desired.

* * *

YOUR CARBON STEEL MAY BE ALLOY STEEL

Now almost impossible to get due to the war, alloy steels have been replaced with carbon steels, in many cases. Strange to say, there are some who would gladly trade a surplus of alloy steel for common steel. The appeal for scrap has brought steel of every kind from home basements, factories and junk yards. Steel mills, having neither time nor facilities for sorting the scrap, dump it into furnaces as it comes to them. As a result, some shipments of ordinary steel contain more nickel

(Continued on page 292)



50,000 CULLMAN SPROCKETS IN STOCK

Quick delivery from stock can be made on more than 2,000 types and dimensions of Cullman Sprockets. Because of specialized experience and equipment, special sprockets can be made to order promptly and at a comparatively low cost.

The Cullman catalog lists sprockets and chains carried in stock, and gives information and tables of value to sprocket users. Write for your copy.

CULLMAN WHEEL CO.
1352-P ALTGELD STREET, CHICAGO, ILLINOIS

"Safe-Hed" STEEL STAMPS

FOR EVERY INDUSTRIAL NEED

AVAILABLE FROM STOCK

Recommended for 90% of all Industrial stamping needs . . . Matthews "Safe-Hed"* Steel Stamps are safe and the most economical for your stamping application. *Reg. U.S. Pat. Off.

WRITE FOR CAT. 146-A

An invaluable booklet for steel stamp buyers. Write for your copy today!

JAS. H. MATTHEWS & CO.

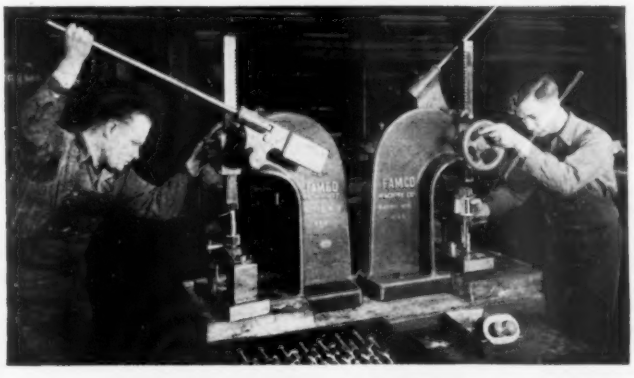
3959 Forbes Street Pittsburgh, Pa.

Branch Plants

New York, Boston, Chicago, Philadelphia, Newark, Syracuse

District Sales Offices

Cleveland Detroit Hartford Birmingham



. . . FOR PRECISION SPEED IN ASSEMBLY OPERATIONS

Illustrated above are two types of Famco Arbor Presses used for final assembly operations on marine fire pumps at the Evinrude Motors plant. Famco's exclusive adjustable gib control for front and side plate adjustment assures perfect ram alignment at all times . . . precision speed on every job. Write for facts on the complete Famco line.

FAMCO MACHINE COMPANY
1313 18th St. Racine, Wis.

Famco builds 32 stock sizes of bench and floor model Arbor Presses . . . ¼ to 15 tons pressure; and 10 sizes of Foot Presses, bench and stand mounted types.

Floor Type Arbor Press

No. 15 Foot Press

famco FOOT AND ARBOR PRESSES

Sanitation is Safety!

YOU GET BOTH IN

FAIRWAY DISPENSERS

WITH THE FAMOUS

"TAMPER-PROOF TOP"

TOP LOCKS WITH REMOVABLE KEY
CLOSE FITTING DUST-PROOF CLOSURE
LARGE CAPACITY (1500 TABLETS) LESS FREQUENT REFILLING
TRANSPARENT WINDOW TO MAKE CHECKING SUPPLY EASIER
CLEAR TABLET RETAINER AVOIDS WASTE AND SPILLAGE
OPERATED BY ONE HAND
FAIRWAY SALT TABLETS

PROTECT your salt tablets and workers from contamination (accidental or intentional). Guard salt tablets like you would your water supply.

The Fairway Dispenser with its "Tamper-Proof Top" is designed to do a job with safety and economy.

FOR FEWER EMPLOYEES, USE THE

FAIRWAY MIDGET

Also with lock top. Capacity 350—10 grain tablets. Can be furnished with locking mount to prevent unauthorized removal.

Fairway SALT TABLETS

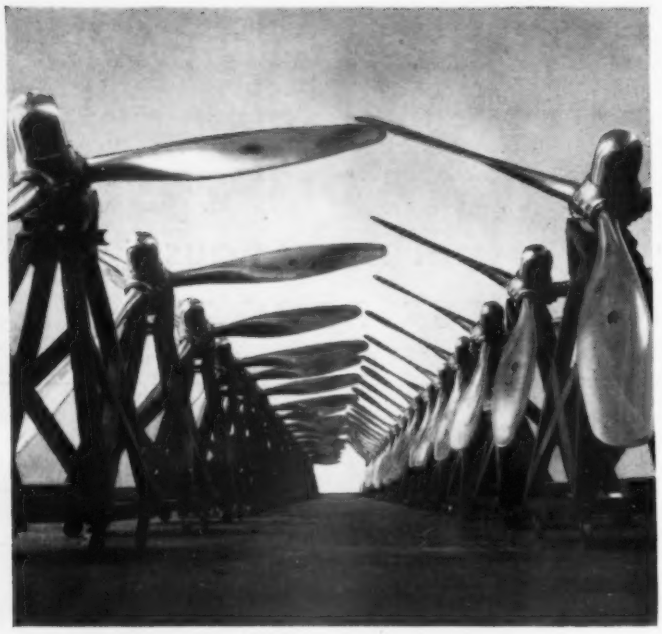
In sealed, "one filling" size cartons. 1500 salt or salt and dextrose combination. 40 boxes to a package. At left, Shake-Out package with metal pouring spout. 12 packages of 250 tablets each to carton. Ideal for isolated jobs or individual dispensing.

Send for illustrated price list.

STANDARD SAFETY EQUIPMENT CO.

Makers of STASAFE Products

232 WEST ONTARIO STREET, CHICAGO, ILLINOIS



Can there be a tougher job for MEYERCORD DECALS?

Decal nameplates on propeller blades! Blades that cut the bitter cold winds of the Arctic . . . the humid air of the Tropics . . . that claw through sand storms of the desert . . . cold, heat, the wrack of battle, hour upon gruelling hour. That's one of Meyercord's many wartime assignments. Have you a tougher task for Meyercord Decals?

Meyercord Decal engineers are constantly solving problems where lightweight, low-cost, non-metallic nameplates, identification, dial faces, information markers, insignia, etc., are required. Decals are ideal for fast production. Quick and easy to apply. Adaptable to any surface. Durable, uniform, highly visible and permit use of color. No sharp edges, no screws, bolts or rivets. The unlimited uses for Decals challenge the imagination. Meyercord technical and designing service is available without cost. Address Dept. 1095.

HAMILTON STANDARD
EAST HARTFORD
CONNECTICUT
DIVISION OF
UNITED AIRCRAFT
CORPORATION
PROPELLERS

Photo of propellers and nameplate courtesy of Hamilton-Standard Division of United Aircraft Corp.

50th Anniversary 1893
DECALS SAVE METAL

FAST • COLORFUL • DURABLE IDENTIFICATION
MEYERCORD DECALS
THE MEYERCORD CO., 5323 W. Lake St., Chicago, Ill.

(Continued from page 290)

than the so-called nickel-steel alloys. Thus we have the paradox; gear engineers, for instance, receiving alloy steel which they endeavored to conserve through the use of heat-treated carbon steel.

The problem was solved by Westinghouse experts through spectroscopic analysis of every new batch of steel received. Normally a laboratory instrument, the spectroscope is rapidly becoming a factory tool. It identifies the spectral lines of every element present in an unknown substance and permits classification of the steels for proper heat treatment. Each batch of metal can be adapted to meet the requirements of a specific application in this manner.

PLASTICS HELP IN WAR AND PEACE

In war as in peace, necessity is the mother of invention. Wartime needs have so stimulated the development of plastics that peacetime users will reap a tremendous benefit when the war is won. The new battleships, for instance, have more than 1000 different plastic parts, while in the Army, plastics are being used for everything from portable pontoon boats to drill jigs.

The aluminum canteen, in use since 1910, is being replaced by a streamlined canteen made out of ethocellulose. Plastics are replacing rubber in such lowly articles as "G. I." shaving brushes and combs. Soldiers now awaken to a plastic "Good Morning" blown on new plastic trumpets made of cellulose acetate which save 20 ounces of brass for each trumpet and have a much better tone.

Plastic fuses are now being used instead of aluminum in firing trench mortars. Plastic components are now used on shells and bombs, and provide false windshields on 37 millimeter armor-piercing shells. Plastics go into the manufacture of Army truck parts, knife handles, mess kits, ink wells, and billions of buttons. Plastic liners for steel helmets add to the soldiers comfort and protection.

The plastic articles are given rigid tests and have to withstand temperatures ranging from 40 degrees below zero to 180 above. They must stand up against steam, heat, cold, and perspiration. More than 28 ounces of crude rubber are saved in the manufacture of raincoats through the use of plastics, with similar savings in hospital sheeting and gas protective fabrics. Cellulose acetate plastic is used in making lenses for gas masks.

Resin-bonded plywood is used to make pontoon boats which are light enough to be hauled over land by Army Engineers. Plastics have replaced aluminum in the manufacture of airplane pilot seats in many planes. A sort of "flour" made from walnut shells is mixed with oil resin and baked into drill jigs, forming dies that will stand up to 8000 pounds pressure per square inch under the hydropress, formed router blocks, shaper blocks; saw jigs, punch jigs, and a forming die for plexi-glass noses.

Resin pine stumps are used in some of the various plastic pipes which have been developed while plastics also give us laminated boards ethyl rubber, and crackproof and shatterproof materials. A shortage of rubber and aluminum led to the use of plastics in navy binoculars. They are also used on range finders, indicators, and light reflectors.

The Army is placing the current rapid expansion of the commercial plastic industry in adapting plastics to national defense. The Ordnance Department and the Quartermaster Corps, the two largest procurement agencies in the Army are both co-operating with civilian

(Continued on page 294)

Uncle Sam Knows Quality

The same quality that has made Eagle Cans and Oilers the best for shop, home, and farm, today makes them standard equipment for aeroplanes, tanks, jeeps, guns and ships.

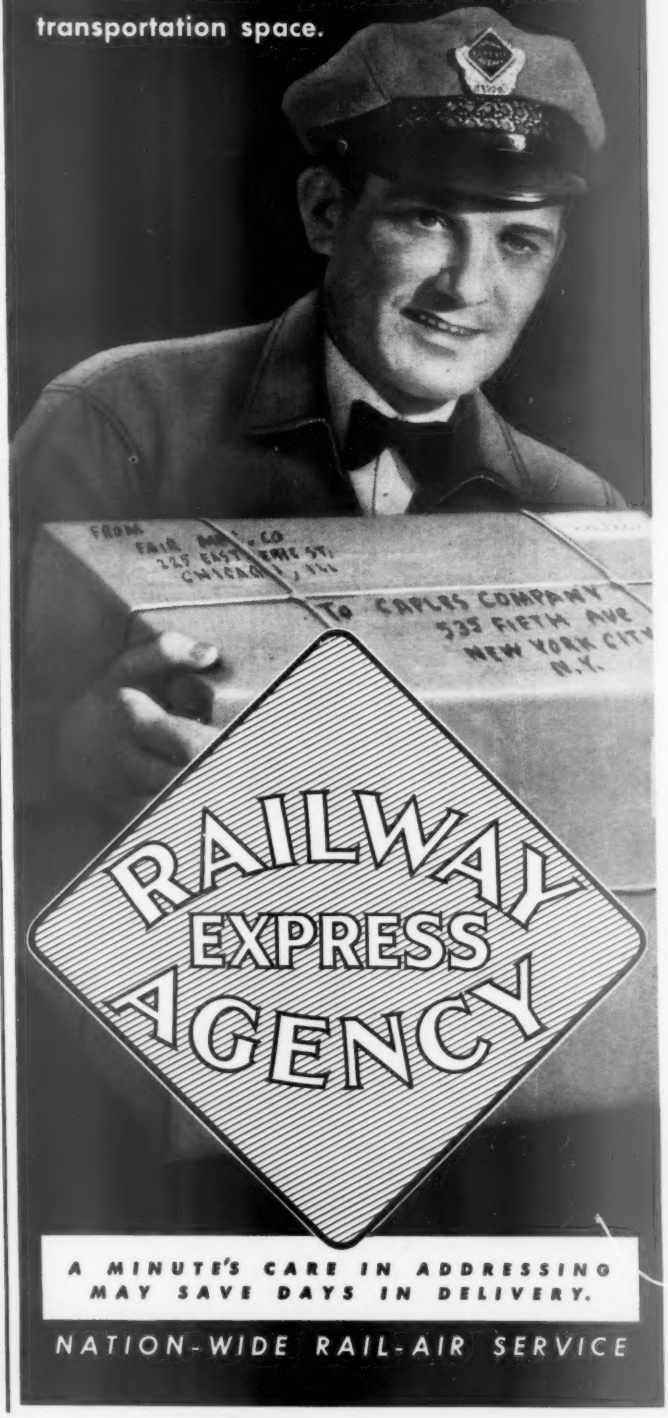
If you can't get all the Eagle products you want now, you'll know that Uncle Sam, like you, knows quality — and he comes first. And when that job is done, we will be able to fill your order more promptly.

EAGLE MANUFACTURING COMPANY

Wellsburg, West Virginia

...WRAP SHIPMENTS SECURELY!

By making sure your shipments are carefully packed and also securely prepared for shipment and properly addressed, you can speed up their handling and delivery. And by preparing your shipments as compactly as possible, you will be helping the war effort by conserving precious transportation space.



NEED A GOOD SUPPLIER OF AMMUNITION COMPONENTS?

Maybe it's a Judd Job!

Judd can supply parts in lots of thousands or millions . . . standard pieces or made to your specifications . . . small metal items — cast, spun, threaded, tapped, formed, stamped, plated, riveted, or almost anything else . . . *every one is a Judd job.*

Details of Judd war service sent promptly on request. Use coupon — or phone or wire our New York Office . . . "War Contracts Manager," at WOrth 2-3653.

DO YOU NEED PARTS LIKE THESE TYPICAL JUDD WAR PRODUCTS?

20 Mm. Rotating Bands; "D" Rings; Snaps; Loops; Slides, Buckles; Keepers; Hooks; Clips; Pull Rings (for Artillery Ammunition); Bolts and Nuts (for Small Arms Cases, etc.), Many Small Stamped Parts (replacing Forgings; have your Engineers check with Judd); Base Plugs (for 20 Mm. Shot)

JUDD

Military Hardware

Since 1870

War Contracts Manager, H. L. JUDD COMPANY
87 Chambers Street, New York City. P-5

Send me your War Contracts Bulletin.

Name.....

Address.....

(Continued from page 292)

research experts, and the Quartermaster Corps has recently added a Plastic Technical Unit to its Supply Division.

Chief interest of the Ordnance Department in plastics is for use as components of ammunitions. Plastic caps on certain armor-piercing shells must be accelerated, in their short four-foot trip through a gun barrel, from a velocity of 0 to 2,800 feet per second, and must at the same time acquire a spin or more than 10,000 revolutions per minute.

The terrific speed and rapid maneuverability of modern airplanes have banished the old open-cockpit days and developed instead a transparent shatterproof acrylic plastic, for windows, noses, hatch covers, tail empennages, landing light covers and rear gunners turrets. This plastic becomes flexible at high temperatures and can be sawed or molded into three-dimensional shapes. The Air Corps is now conducting experiments which promise to make even greater use of plastics, already indispensable to its present high efficiency.

The Signal Corps, which provides the Army's extensive system of communication has found plastics extremely useful for parts of telephones, switchboards, dynamotors, radio compasses, microphones and other complicated instruments. Plastics made of synthetic resins, cellulose acetate, polyvinyl chloride and polystrene are all utilized.

The Chemical Welfare Service uses plastic face-piece lenses made of cellulose acetate in the gas masks furnished to troops, which are said to protect wearer against any known type of war gas. Plastics are particularly useful in the diaphragm gas masks now available for use by officers and others who must talk while wearing them. First use of plastics for lenses in masks came in 1939. Now, even the horses which carry the Cavalry into battle, wear them when gas threatens.

* * *

GLASS CONTAINER RESTRICTIONS

Temporary restrictions on the amount of empty new glass containers which may be acquired by chemical manufacturers, carbonated beverage bottlers, brewers, distillers, or any other commercial user of glass containers are imposed by Supplementary Order L-103-a, issued by the War Production Board. The order expires on September 30, 1943. It prohibits acquisitions which will increase inventories to more than a 60-day supply of any particular item.

The purpose of the order is to assure an equitable distribution of glass containers, particularly food containers, during the peak canning season this summer by preventing excessive forward buying of glass jars, bottles, pails, jugs, and tumblers. Glass container demand is exceeding the ability of the glass industry to produce.

A commercial user may not accept or have a glass container manufacturer, dealer, or jobber set aside for him any quantity of empty new glass containers which would increase his inventory to more than either two carloads or a 60-day supply of containers of a particular design and finish.

A supplier may not deliver to, or set aside for, a commercial user any quantity of glass containers which he has reason to believe the user is not entitled to accept under the terms of the order.

In computing his inventory, a user must include his entire stock of all empty new glass containers of the same design and finish and which are on hand in his

(Continued on page 296)

New DATA

on
OILSEALS and
GREASEALS

for
Aircraft and
Motorized Units

This NEW BULLETIN . . .

gives you the latest information, recommendations, diagrams, listings, prices, etc., on the broad line of Gits Oilseals and Greaseals, which are widely used in today's mechanized warfare. They provide positive bearing protection under all conditions. Your FREE copy is ready for mailing—write for it.

GITS BROS. MFG. CO.
1865 South Kilbourn Avenue • Chicago, Illinois
30 years of oil cup experience

For EVERY IMPORTANT FASTENING

ON LAND-ON SEA-IN THE AIR

KEYSTONE The Largest Stock on the East Coast
FOR
BOLTS-NUTS-SCREWS
WASHERS-RIVETS
made in the following metals

BRASS — STEEL
STAINLESS STEEL
MONEL — NAVAL BRONZE
EVERDUR — ALUMINUM
NICKEL ALLOY STEEL

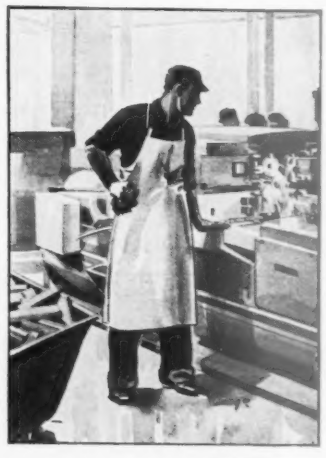
"The Most Complete Source"
KEYSTONE
THE PERFECT TIE-UP SINCE 1922
Send us your samples and blue prints.
Immediate Delivery on Emergency orders.
Catalog on Request

KEYSTONE BOLT & NUT CORP
62 MURRAY STREET NEW YORK N. Y.

ALL SET FOR THE WET

STOPPED BY FROG BRAND

Whenever Man faces The Wet . . . . that's when he gets the best possible protection from Sawyer's Frog Brand Oiled Clothing. Pioneers in the processing of cloth with oils, Sawyer now keeps men dry in hundreds of occupations . . . . at the same time devoting a considerable portion of its output to the War Effort.



For information write to
THE H. M. SAWYER
& SON COMPANY
East Cambridge, Mass.

Sawyer's

FROG BRAND OILED CLOTHING

It's Easy—It's Quick

to set-up or re-arrange a shop with...

HALLOWELL

SHOP EQUIPMENT

One advantage of choosing your work-benches from the 1367 ready-made "Hallowell" combinations is the ease in setting them up. They're constructed to stand firm and rigid without costly, time-taking bolting to the floor. This also makes it a simple matter to rearrange the shop if desired. Any number can be joined together to provide as long a continuous top as may be needed.

With the better-than - average deliveries of "Hallowell" Benches you save more precious time. The "Hallowell" Shop Equipment Catalog gives complete information. Send for a copy.

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA. BOX 590

—BRANCHES—

BOSTON-DETROIT-INDIANAPOLIS-CHICAGO-ST. LOUIS-SAN FRANCISCO

(Continued from page 294)

plant, in transit from his supplier, and set aside for him by his supplier.

The order does not apply to glass containers for use in packaging fresh fish, fresh shellfish, fresh fruits, fresh vegetables, or products from fresh fruits and vegetables. Fresh products means products which have not been previously preserved or frozen (temporary refrigeration in bulk excluded).

REQUIRES MATERIAL & MEN

A proposed post-war highway program calling for the expenditure of not less than a billion dollars a year of Federal funds for a period of at least three years has been proposed by the American Association of State highway officials. It is estimated that such a program would give employment to 750,000 men, besides rehabilitating, improving and expanding the highway system.

NYLON USED IN SURGICAL SUTURES

Millions of feet of nylon monofilament that formerly went into tennis racquet strings and fishing leaders will replace silk this year in surgical sutures for the Army, Navy, civilians, and lend-lease shipments according to the Plastics Department of E. I. du Pont de Nemours & Company.

Stronger and less irritating to the body's tissues, nylon has proved a superior replacement for silk in sutures. It will not dry out and rot like the natural fiber, and, therefore, quantities are being made for storage at United Nations' medical depots throughout

(Continued on page 298)

Maximum Tool Life *plus* Maximum Production —Use CROBALT!

● A superior heat resisting chromium-cobalt-tungsten high speed cutting alloy. Permits higher speeds with longer tool life.

Eliminates the possibility of chipping. Combines maximum production with minimum cost per piece.

Catalog rushed on request . . .

Write Dept. C

CROBALT INC.

ANN ARBOR, MICHIGAN

CROBALT

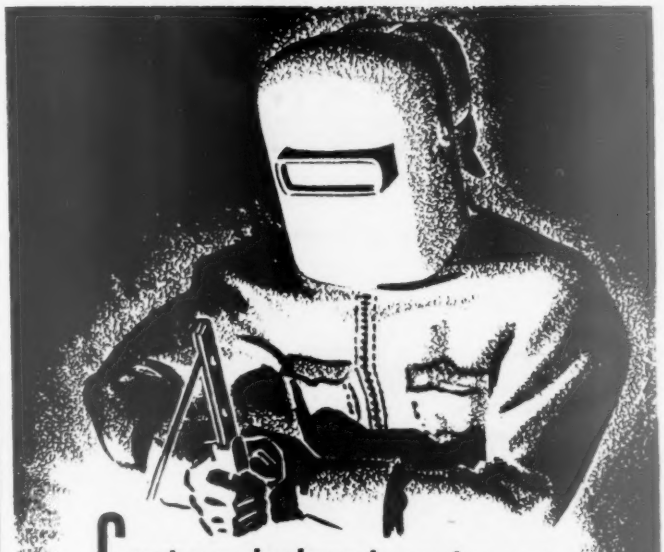
NEW!
Simple,
Safe
Method of handling ACIDS and CHEMICALS!

SPEARE'S SAFETY SIPHON

Speare's Safety Siphon discharges acids and chemicals by the safe vacuum principle. Works in Carboys, Drums and Barrels. Consists of sturdy acid-resistant casing—flexible Saran plastic siphon tube—and positive flow control valve. Has no glass parts to break, requires no bulbs or auxiliary pumping apparatus, can not be overprimed or overfilled, does not build up dangerous pressures. Steady flow and instantaneous control always maintained. Fully tested for Sulfuric, Nitric, Hydro-chloric (Muriatic), Sulfurous, Glacial Acetic, Acetic Acids, bleaching solutions and other chemicals. Reasonably priced. Write for detailed literature.

Full line of other specialized safety equipment is described in leaflet "Safe Handling of Acids and Chemicals". Write for a copy.

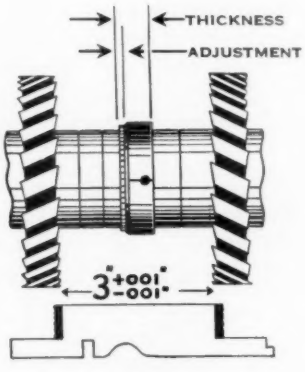
PULMOSAN
SAFETY EQUIP. CORP.
Dept. P,
176 Johnson St., Brooklyn, N. Y.

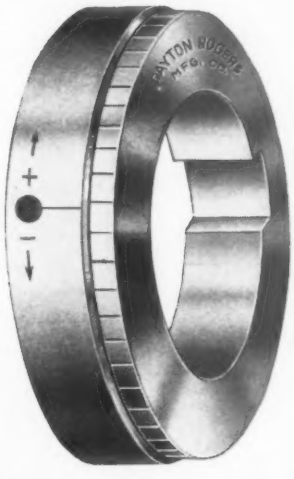


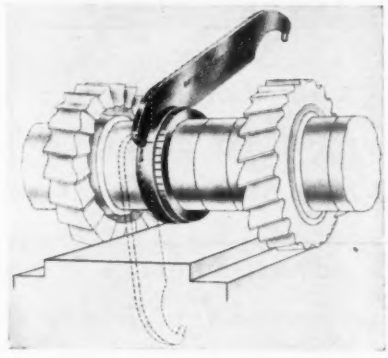
Custom designed equipment fabricated from steel plates and structural shapes
Write for Quotations

FORT WAYNE STRUCTURAL STEEL CO.
Fabricators-Manufacturers-Engineers
4920 N. CLINTON ST., FORT WAYNE, INDIANA

Precision Production Gang Milling at a Saving







Spanner wrenches furnished with all collars.

These new improved Micrometer adjustable spacing collars for milling machine cutter arbors are designed for accurate spacing of side milling cutters, gang milling, and various other multiple milling setups. This adjustable spacing collar lends itself readily to close accurate work, and may be adjusted by thousandths by merely loosening the cutter arbor nut. The collars are graduated in thousandths; however, a quarter thousandth graduation is easily obtained — ASSURING you PRECISION POSITIVE ADJUSTMENT at all times.

DAYTON ROGERS MANUFACTURING CO.

30 South Jefferson St., Chicago, Ill. 30 Church St., New York, N. Y.

CONSERVE YOUR TOOLS

10½ x 15" reproductions of the above illustration for posting in your shop, will be sent to you upon request.

This advertisement is a part of The Fairmount Tool Victory Drive, tool conservation campaign.

Hand Tools • Special Tools • Forgings

The FAIRMOUNT TOOL & FORGING CO.

★ ★ ★ 10611 QUINCY AVE. CLEVELAND, OHIO

(Continued from page 296)

the world. Nylon has greater tensile strength than silk and can be produced in controlled, uniform diameters.

Nylon monofilaments are solid strands, in contrast to silk sutures which are made by twisting together a number of threads. They are particularly good for heavy wounds, where a "stay suture" is required. The nylon sutures are non-capillary. The synthetic is so inert and non-irritating that it can be used internally as well as externally. It does not fray or splinter. There is no chance of small slivers wearing off the suture and working through the body.

PROTECTING WORKERS' HEALTH

The Westinghouse industrial hygiene laboratory keeps a card index of all of the thousands of materials used in a war plant—and in the case of Westinghouse this has grown to 9,000 different items since the war began. Before any new material is put into use, it first is sent to the laboratory for a check. If it is found toxic or otherwise harmful, the information is passed on to shop supervisors and workers, and the necessary protective measures instituted.

SUBSTITUTE FOR BRASS

Special steel used far making cartridge cases as a substitute for brass has been developed by the metallurgists of Republic Steel Corp. The new steel is reported to have the advantages inherent in brass, such as excellent drawing qualities, high elastic recovery, and good corrosion resistance. Its development commences at the open hearth and is contingent upon new practices previously never considered, and new rolling and annealing procedures.

200/1,000,000 OUNCE

A single layer of oxygen atoms on a sliver of steel the size of a safety razor blade can be weighed by a sensitive balance in the Westinghouse Research Laboratories. Such a layer weighs two hundred-millionths of an ounce, or about a hundreth as much as a speck of pepper.

ANNUAL WAR COST $100,000,000,000

Already this war has cost more than the whole of the last war. During the month of December 1942 we were spending at the rate of $233,600,000 (million) a day. For the fiscal year that will begin July 1, 1943 war spending will rise to the annual rate of $100,000,000,000 (billion).

DEVELOPMENT OF SUPERIOR CATALYST ANNOUNCED BY SOCONY

Development of a new catalyst which under comparable conditions will increase yields of basic crude stocks from 13% to 30% has been announced by Socony-Vacuum Oil Company. Officials of the company said gasolines made over the new catalyst would increase available power output from 23% to 35%, depending on charging stocks used.

The catalyst resembles small glass beads and as tested in the company's pilot plant "has proved to be extremely rugged, with far greater strength and resistance to wear than other catalysts; and it has demonstrated exceptional catalytic activity with very little loss in

(Continued on page 300)

— FIRST RULE OF WARTIME SHIPPING —

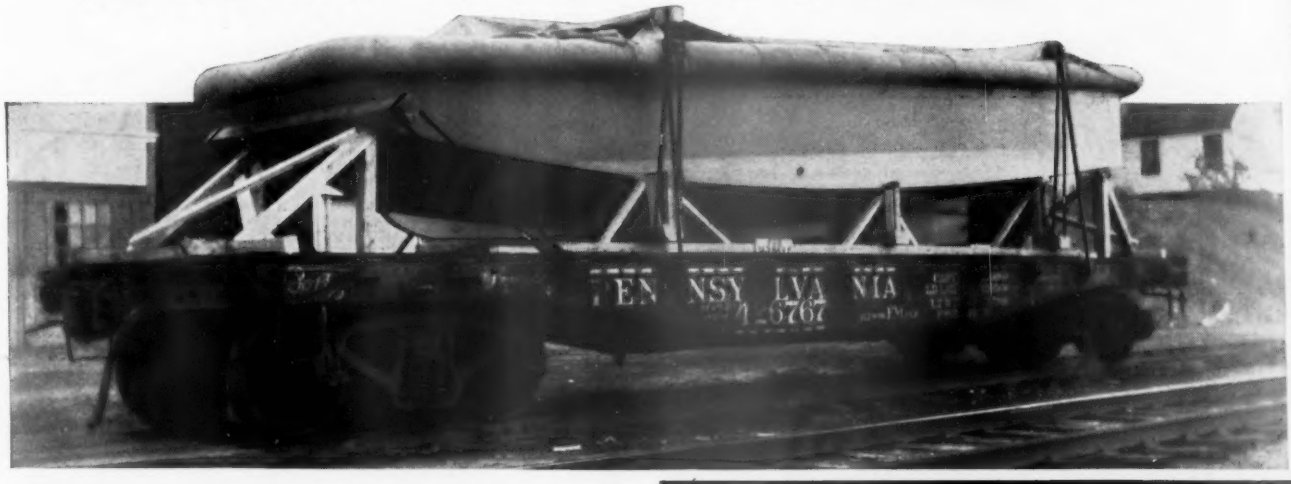
PREPARE for a Long, Rough Journey

SIGNODE System of Steel Strapping

● *"Boats by the carload"* is another example of the unusual problems shipping men have had to face in this war.

Signode representatives have specified or made constructive suggestions for over a thousand new types of shipment. In co-operation with Government officials they have educated American manufacturers of war goods to realize that battle front shipments may have a rough and hazardous trip.

Signode field men can make practical shipping suggestions for your products. Write us for Bulletin on Wartime Applications.



SIGNODE

SIGNODE STEEL STRAPPING COMPANY
2602 No. Western Ave., Chicago, Ill.
Brooklyn, N.Y.: 371 Furman St. • San Francisco, Calif.: 454 Bryant St.
Signode Steel Strapping Meets All Federal Strapping Specifications

Specify
TRI-LOK

OPEN STEEL FLOORING • SAFETY STEPS
CONCRETE ARMORING T. TRI-LOK

DRAVO CORPORATION
300 PENN AVENUE, PITTSBURGH, PA.
REPRESENTATIVES IN PRINCIPAL CITIES

Full descriptive catalog of Tri-lok Grating, Safety Treads and other products on request.

CONVENTION BOUND?

If so, visit our Salesrooms at
Fifth Avenue and 45th Street,
a few blocks walk
from the Waldorf

Headquarters for Diamonds

L. & C. MAYERS CO.

ESTABLISHED 1912
Importers of Diamonds and Watches
Distributors of Jewelry, Silverware,
Luggage and Giftwares
545 FIFTH AVENUE
NEW YORK

KEEP 'EM WORKING

This book is aimed to help you get longer service out of your metal cutting tools. In detail it covers the use, maintenance and repairs of Porter Bolt Clippers — and other hand tools used in metal work.

Tools are fighting equipment because this war is being waged on the production line as well as on the battle fields. To the end that you may keep tools working, this book is dedicated. It's free — just ask on a letter or post card, for Porter's Tool Maintenance Book. It's a shop book gotten up for mechanic's use out of practical experience.

The Army-Navy "E" — an honor all Porter men and women pride.

(Note: We are using every available man, twenty-four hours a day, to meet Government requirements, and especially to meet our jobbers' needs with the earliest possible shipments permissible.)

H. K. PORTER, INC.
EVERETT, MASS.

(Continued from page 298)

service," Socony's announcement said. Licensing agent for the new bead catalyst is Houdry Process Corporation.

SYNTHETIC WAXES CAUSE OCCUPATIONAL DERMATITIS

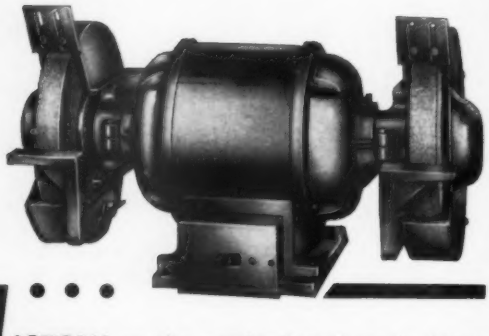
Two years' study and treatment of a form of acne afflicting workers engaged in making synthetic waxes and in using the product to insulate wires and condensers, indicate that the trouble is caused by irritation rather than sensitivity, according to Dr. Eugene F. Kelley, instructor in dermatology at Columbia University College of Physicians and Surgeons. Sources of the affliction were traced to chlordiphenyl and chloronapthalene vapors which when released from the waxes settle upon skin and clothing, solidify and in time are rubbed into the follicles. Period of exposure averages about four months.

SPUN INTO PERMANENT MOLDS

A radical innovation in fabricating practice was proposed by Frank W. Curtis, Chief Engineer, Van Norman Machine Tool Co., Springfield, Mass., at the Milmaukee convention of the A. S. T. E. His company has developed a process by which steel filings, chips or scrap can be placed in a small "crucible", melted electrically, and then spun into permanent molds.

With this process, such difficult-to-machine parts as turbine blades can be cast to shape to an accuracy of a few ten-thousandths of an inch instead of requiring long batteries of milling machines to produce them. The process is applicable to the manufacture of many ordnance parts now requiring much machining.

Valley Heavy Duty **GRINDERS** Ball Bearing **MOTORS**



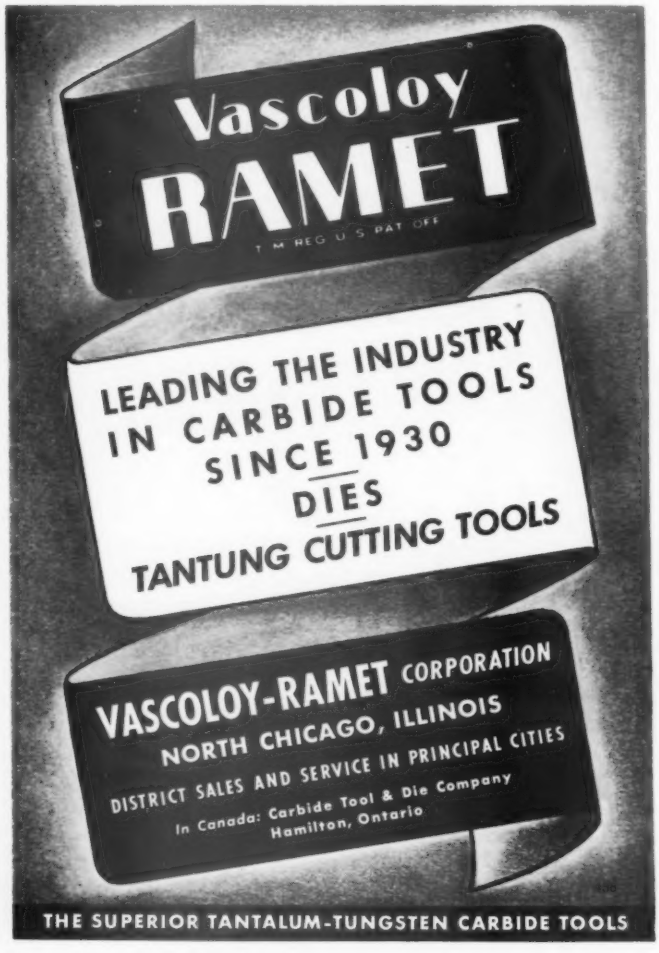
V • • •

VICTORY on the production front is being aided mightily by the economical and faithful service of thousands of Valley motors and grinders in war plants everywhere.

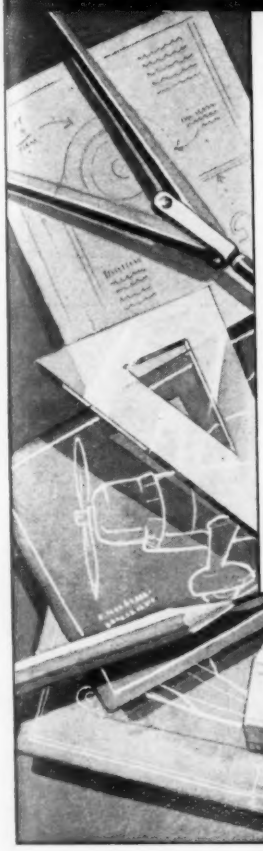
Prompt delivery of Valley Equipment can be obtained by those authorized to purchase.

Valley Ball-Bearing Motors from ½ h.p. to 75 h.p. . . . Grinders from ¼ h.p. bench type to 5 h.p. pedestal models.

VALLEY ELECTRIC CORP.
4221 Forest Park Blvd. St. Louis, Missouri

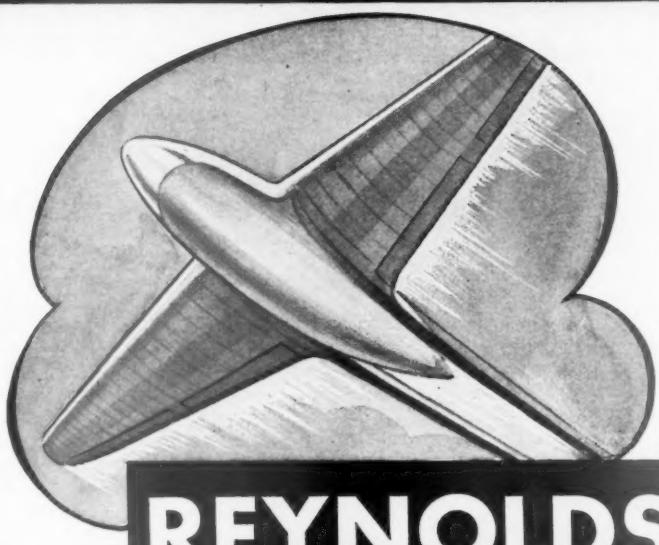


IDEAS OF TODAY ARE PRODUCTS OF TOMORROW



REYNOLDS . . . Specializing in the sound, fundamental application of plastics, is fully equipped to take over all of your plastic problems from inception of idea to finished product.

Plastics fabrication by . . .
Compression—Injection
Extrusion—Sheet Forming
Invest In War Bonds



REYNOLDS
MOLDED PLASTICS
CAMBRIDGE, OHIO
DIVISION OF
REYNOLDS SPRING COMPANY
JACKSON, MICHIGAN

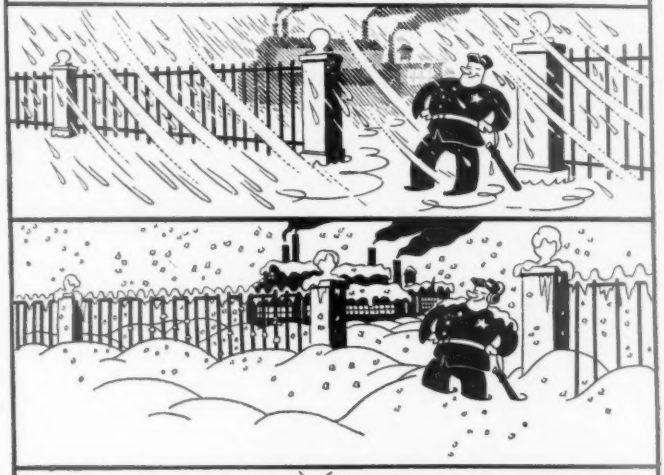
General Industries
SMALL-POWER MOTORS

have what it takes for WAR SERVICE

War imposes burdens on motors seldom required in peace times, and G. I. small-power motors employed in many branches of the services are standing up and doing the job under the most exacting conditions. Correctly designed, quality built, they can be depended on to run smoothly and quietly, and fulfill all the power demands of constant and varying loads. Made in many types and sizes to meet a wide range of specifications, measuring up in every particular to Government requirements. Do not hesitate to enlist the cooperation of G. I. engineers.

The General Industries Co.
ELYRIA, OHIO

TISSUE TIPS by VICTORIA



***Specify* VICTORIA TOILET TISSUES**
Single Fold, Double Fold or Black Core—for dependable quality.
Victoria Paper Mills Co., Fulton, N.Y. Craftsmen in paper-making since 1880.

Advertisers IN THIS ISSUE

A

Abbott Ball Company 146
Abrasive Products, Inc. 166
Accurate Spring Mfg. Co. 148
Ace Fastener Corporation 186
Acme Steel Company 57
Acme Visible Records, Inc. 230
Acushnet Process Co. 29
Air Express Division, Railway Express 213
Air Reduction Sales Co. 215
Allen Mfg. Co., The 285
Allied Machinery & Engineering Corp. 262
American Brake Shoe & Foundry Co., The 203
American Cable Division, American Chain & Cable Company, Inc. 66
American Chain & Cable Company, Inc. 47, 66, 155, 163, 195, 287
American Gauge Co., The 304
American Manganese Steel Div. of American Brake Shoe & Fdry. Co. 214
American Optical Company 32
American Saw & Mfg. Co. 116
American Screw Company 63, 303
American Steel & Wire Company, U. S. Steel Corporation of Delaware 263
American Swiss File & Tool Co. 244
Ames Bag Machine Co. 283
Ampco Metal, Inc. 198
Anchor Post Fence Co. 261
Argus, Incorporated 254
Arkwright Finishing Co. 152
Armour Sand Paper Works 122
Armstrong-Blum Mfg. Co. 256
Armstrong-Bray & Co. 114, 218
Armstrong Bros. Tool Co. 200
Atkins & Co., E. C. 6

B

Baldwin Hill Co. 220
Barnes Company, Wallace 227
Beaver Pipe Tools, Inc. 285
Behr-Manning, Div. of Norton Co. 114
Black & Decker Mfg. Co., The 24, 25
Blaw-Knox Co. 138
Blue Ridge Glass Corporation 225
Bond Foundry & Machine Co. 216
Booth Felt Company, The 202
Briggs & Stratton Corp. 149
Bristol Company, The 303
Bristol Brass Corporation, The 147
Brown Paper Co., L. L. 190
Brown & Sharpe Mfg. Co. 27
Bruce Company, E. L. 168
Bundy Tubing Company 18
Bunting Brass & Bronze Company 164

C

Capewell Manufacturing Co., The 254
Carboloy Co., Inc. 157
Carborundum Company 241
Carey Company, The Philip 139
Central Paper Co. 287
Central Screw Company 242, 303
Century Electric Company 3
Chandler Products Corporation 303
Chase Bag Co. 246
Chicago Metal Hose Corporation 272
Chicago Rawhide Mfg. Co. 20
Chicago Rivet & Machine Co. 289
Chicago Wheel & Mfg. Co. 162
Clark Tructractor Co. 141
Clemson Bros., Inc. 270
Cleveland Cap Screw Company, The 50
Cleveland Twist Drill Co., The 207
Columbia Ribbon & Carbon Mfg. Co. 188
Columbus-McKinnon Chain Corp. 120
Commercial Metal Products Co. 240
Continental Rubber Works 150
Continental Screw Company 208, 303
Copperweld Steel Company 13
Corbin Co., P. & F. 303
C-O-Two Fire Equipment Company 191
Crane Co. 239
Crobalt, Inc. 296
Cullman Wheel Co. 290
Curtis Pneumatic Machinery, Division of Curtis Manufacturing Co. 211

D

Daniels, Inc., C. R. 262
Darling Valve Mfg. Co. 7
Darnell Corp., Ltd. 242
Dayton Rogers Manufacturing Co. 297
Dearborn Chemical Company, The 128
Delta File Works 238
Delta Manufacturing Company 151
Dick Company, A. B. 175
DoAll Company, Inc., The 238
Dodge Manufacturing Co. 231
Donaldson Company 201
Dravo Corporation 299
Du-Lite Chemical Corp. 280
Dumore Co., The 306
Durant Mfg. Co. 248

E

Eagle Manufacturing Company 293
Egyptian Lacquer Mfg. Co. 22
Elastic Stop Nut Corp. 62
Electric Auto-Lite Co., The 237
Emerson Electric Mfg. Company 117
Enterpise Galvanizing Co. 218
Esleeck Mfg. Co. 174
Exact Weight Scale Company, The 281
Extruded Plastics, Inc. 290

F

Fafnir Bearing Company, The 144
Fairbanks, Morse & Co. 111
Fairmont Tool & Forging Company 298
Famco Machine Co. 291
Firth-Sterling Steel Company 121
Fiske Bros. Refining Co. 9
Fleur-O-Lier Manufacturers 249
Flexrock Company 230
Flori Pipe Company 39
Fort Wayne Structural Steel Company 297
Forest City Foundries Co., The 156
Formica Insulation Co., The 46
Foxboro Company, The 4
Frasse & Co., Inc., Peter A. 49
Fuller Brush Company, The 202

G

Gair Co., Robert, Inc. 253
Gaylord Container Corp. 123
General Box Company 252
General Electric Company 153, 167, 212
General Electric Company, Mazda Lamp Division 58
General Industries Co., The 301
General Industries Co., The, Molded Plastics Div. 243
General Screw Mfg. Co. 236
Gits Bros. Mfg. Co. 295
Globe Steel Tube Company 223
Graham & Co., Inc., John H. 226
Graybar Electric Company 64
Greenfield Tap & Die Corporation 30
Grinnell Company, Inc. 33

H

Hammermill Paper Co. 180
Harnischfeger Sales Co. 159
Harper Company, The H. M. 210
Harshaw Chemical Company, The 288
Hassall, Inc., John 256
Hazard Wire Rope Division 47
Hill, Inc., R. O. H. 188
Hodell Chain Co. 246
Holliston Mills, Inc., The 60
Holo-Krome Screw Corp. 133
Holyoke Card & Paper Company 177
Hopp Press, Inc., The 248
Hotel Belmont Plaza, The 276
Hotels, De Witt Operated 268
Hotel Lexington 274
Hotel Lord Baltimore 210
Hotel Philadelphian 242
Howard Foundry Company 129
Howard Paper Company, The 185
Hudson Pulp & Paper Corp., Moore & Thompson Division 283
Hunt Pen Co., C. Howard 189
Hunter Pressed Steel Co. 23
Hy-Pro Tool Company 287

I

Ideal Commutator Dresser Co. 203
Independent Pneumatic Tool Co. 197
Inland Steel Company 5
International Paper Company 187
International Screw Co. 303
Irvington Varnish & Insulator Co. 281

J

Jelliff Mfg. Co., C. O. 170
Jenkins Bros. ..... Back Cover
Jessop Steel Company 217
Johnson Bronze Co. 192
Johnson Steel & Wire Co., Inc. 260
Judd Company, H. L. 294

K

Keasbey & Mattison Company 154
Kellogg Switchboard & Supply Co. 205
Kendall Company, J. B. 279
Keystone Bolt & Nut Corp. 295
Kidde & Co., Inc., Walter 38
Kimberly Clark Corporation 277
Koh-I-Noor Pencil Company, Inc. 189
Kron Co., The 283
Kropp Forge Company 31
Kuhns Bros. Co., The 289

L

Lacey-Webber Company 258
Ladish Drop Forge Co. 134, 135
Laminated Shim Company 250
Lamson & Sessions Company, The 40, 41, 303
Lee Spring Co., Inc. 293
Leschen & Sons Rope Co., A. 21
Levinson Steel Company, The 233
Levinson Steel Sales Co. 232
Libbey•Owens•Ford Glass Company 171
Link-Belt Company 161
Logan Drinking Cup Co. 266
Lowell Wrench Company 218
Lubriplate Div., Fiske Bros. Refining Co. 9
Lunkenheimer Co., The 204
Lyon Metal Products, Inc. 255

M

Macklin Company, The 8
MacRae's Blue Book 210
MacWhyte Company 15
Magnus Chemical Company 246
Magnuson Products Corporation 260
Markal Company 170
Marsh Corp., Jas. P. 251
Marsh Stencil Machine Co. 199
Mason Box Company 19
Mathews Conveyor Company 158
Matthew & Co., Jas. H. 291
Mayers Co., L. & C. 299
Meyercord Co. 292
Midwest Piping & Supply Company 61
Miller Company, The 48
Miller Falls Paper Company 189
Minnesota Mining & Mfg. Company 234, 258
Moore & Thompson Division, Hudson Pulp & Paper Corp. 283
Morse Twist Drill & Machine Co. 267
Morton Salt Company 124
Muehlhausen Spring Corporation 42

N

National Bearing Metals Corporation 219
National Bronze & Aluminum Foundry 59
National Screw & Mfg. Co. 165, 303
National Twist Drill & Tool Co. 43
Neidich Process — Division of Underwood Elliott Fisher Co. 190
New England Screw Company 303
Newton Mfg. Co., The 285
Nicholson File Co. 11
Norton Company 114, 142, 143

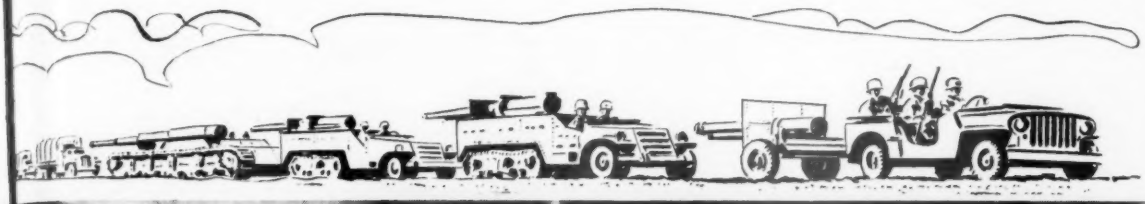
O

Oakite Products, Inc. 248
Old Town Ribbon & Carbon Co., Inc. 193, 194
O'Neil-Irwin Mfg. Co. 270
Osborn Mfg. Co., The 229

P

Packwood Mfg. Co., G. H. 260
Page Fence Association, Division of American Chain & Cable Co., Inc. 155
Page Steel & Wire Division of American Chain & Cable Co., Inc. 287
Parker Company, The Charles 230, 303
Parker Ink Company, The 182
Parker-Kalon Corporation 222, 303

MECHANIZE
Your Screw Driving Army



PHILLIPS SCREWS PERMIT FAST DRIVING METHODS!

Like our fast-moving fighting forces, your screw driving army can now be mechanized to set new speed records on the assembly line.

You can have the advantages of power or spiral driving on almost any job . . . by adopting Phillips Recessed Head Screws. Automatic centering of driving force in the Phillips Recess eliminates the driving troubles that often make fast driving methods impractical. Fumbling, wobbly starts . . . slant-driven screws . . . broken-head screws . . . dangerous skidding of driver points . . . all are forgotten problems in plants that use screws with the Phillips Recessed Head.

Even "green hands" can do fast, skilled work. Savings of 50% in driving time are common. Such man-hour savings are important to the war effort, since so many workers in the average plant are driving screws.

They cost less to use! Compare the cost of *driving* Phillips and slotted head screws. You'll find that the price of screws is a minor item in your total fastening expense . . . that it actually costs *less* to have the many advantages of the Phillips Recess in your assembly work.

KEY TO FASTENING SPEED AND ECONOMY

The Phillips Recessed Head was scientifically engineered to afford:

Fast Starting – Driver point automatically centers in the recess . . . fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.

Faster Driving – Spiral and power driving are made practical. Driver won't slip out of recess to injure workers or spoil material. (Average time saving is 50%.)

Easier Driving – Turning power is fully utilized by automatic centering of driver in screw head. Workers maintain speed without tiring.

Better Fastenings – Screws are set-up uniformly tight, without burring or breaking heads. A stronger, neater job results.

PHILLIPS *Recessed Head* SCREWS

WOOD SCREWS • MACHINE SCREWS SELF-TAPPING SCREWS • STOVE BOLTS

21 SOURCES

American Screw Co., Providence, R. I.
The Bristol Co., Waterbury, Conn.
Central Screw Co., Chicago, Ill.
Chandler Products Corp., Cleveland, Ohio
Continental Screw Co., New Bedford, Mass.
The Corbin Screw Corp., New Britain, Conn.
The H. M. Harper Co., Chicago, Ill.
International Screw Co., Detroit, Mich.
The Lamson & Sessions Co., Cleveland, Ohio
The National Screw & Mfg. Co., Cleveland, Ohio
New England Screw Co., Keene, N. H.
The Charles Parker Co., Meriden, Conn.
Parker-Kalon Corp., New York, N. Y.
Pawtucket Screw Co., Pawtucket, R. I.
Pheoll Manufacturing Co., Chicago, Ill.
Reading Screw Co., Norristown, Pa.
Russell Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Scovill Manufacturing Co., Waterville, Conn.
Shakeproof Inc., Chicago, Ill.
The Southington Hardware Mfg. Co., Southington, Conn.
Whitney Screw Corp., Nashua, N. H.

ADVERTISERS IN THIS ISSUE

-- Continued --

Parsons Paper Company 184
Pawtucket Screw Company 303
Pennsylvania Salt Manufacturing Company 53
Pheoll Manufacturing Co. 303
Philco Corporation 137
Phillips Screw Manufacturers 303
Pioneer Rubber Co., The 266
Pittsburgh Piping & Equipment Co. 236
Pittsburgh Plate Glass 269
Pittsburgh Steel Company 275
Plumb, Inc., Fayette R. 240
Porter, Inc., H. K. 300
Powell Company, The William 245
Preformed Wire Rope 257
Progressive Mfg. Co., The 278
Pulmosan Safety Equipment Corp..... 297
Pure Oil Company, The 283

R

Railway Express Agency, Inc. 213, 293
Reading-Pratt & Cady Division, American Chain & Cable Co., Inc. 163
Remington Rand, Inc. 172
Republic Rubber Division Lee Rubber & Tire Co. 169
Reynolds Molded Plastics 301
Rhoads & Sons, J. E. 236
Richardson Company, The 28
Ridge Tool Co., The 44
Roebling's Sons Co., John A. 160
Russell, Burdsall & Ward Bolt & Nut Co. 34, 303
Ryerson & Son, Inc., Joseph T. 68

S

Sawyer & Son, H. M. 295
Schieren Company, Chas. A. 196
Scoville Manufacturing Co. 303
Seymour Mfg. Co., The 132
Shakeproof, Inc. 209, 303
Shell Oil Company 45
Shepard-Niles Crane & Hoist Corp. 118
Signode Steel Strapping Co. 299
Simonds Gear & Mfg. Co., The 283
Simonds Saw & Steel Co. 145
Simonds-Worden White Co. 268
Skilsaw, Inc. 17
Smith Steel Co., Inc., David 281
Snap-On Tools Corp. 265
Southington Hardware Mfg. Co., The 303
Spartan Saw Works 250
Standard Pressed Steel Co. 296
Standard Register Co. 181
Standard Safety Equipment Co. ..278, 291
Stanley Chemical Company 247
Stanley Electric Tool Div. 282
Stanley Works, The 279
Star Paper Fastener Co. 184
Starrett Co., The L. S. 228
Strathmore Paper Co. 179
Straubel Paper Company 186
Stuart Oil Company, Ltd., D. A. 283
Sturtevant Co., P. A. 262
Sylvania Electric Products, Inc. 52
Synthane Corporation 35, 36

T

Tanglefoot Company, The 286
Taylor Chain Company, S. G. 264
Taylor Forge & Pipe Works 271
Texas Company, The....Inside Front Cover
Thermoid Co. 51
Thompson & Son Company, The Henry G. 224
Threadwell Tap & Die Co. 264
Timken Roller Bearing Company 125
Tinnerman Products, Inc. 119
Tube-Turns, Inc. 113

U

Union Fork & Hoe Company, The 266
United States Steel Corporation Subsidiaries 235, 26
United States Steel Supply Company 23

V

Valley Electric Corp. 30
Vascaloy-Ramet Corporation 30
Veeder-Root, Incorporated 27
Victor Safe & Equipment Co., Inc., The 19
Victoria Paper Mills Co., The 30
Visible Index Corporation 18

W

Walker-Turner Company, Inc. 37
Walworth Company 26
Ward Leonard Electric Company 268
Wasmer Bolt & Screw Corp. 270
Wassell Organization 54
Waters & Waters Branch, Division of Underwood Elliott Fisher Co. 190
Watson-Stillman Co. 284
Weatherhead Co., The 221
Webster Co., The F. S. 178
Wesson Tool Company 305
Western Cartridge Company, Brass Mill Division 127
Western Felt 289
Westinghouse Electric & Manufacturing Co.....130, 131, 140, Inside Back Cover
Weston Company, Byron 176
Wheeler Reflector Company 126
Whitney Screw Corp. 303
Winter Brothers 259
Wittek Manufacturing Co. 244

Y

Youngstown Sheet & Tube Co. 115

You need them—
You Can get them Now!

Tools that will help you produce faster. Visual gages for production or inspection that will check your work with extreme accuracy and speed.

You need them for both your production and your tool departments. And we can now promise deliveries as follows:

Lapping Plates	**2 weeks**
Radius dressers	**3 "**
Bench centers	**3 to 4 weeks**
Amplifying gages	**3 weeks**
Thread checkers	**3 "**
Hole checkers	**Deliveries dependent upon special equipment required**

In addition, we are making special tools and gages for Government and war plants. Keep this in mind when next in need of precision tools and gages. Write for Bulletin No. 43-P.

THE AMERICAN GAUGE CO.
125 Bayard Street DAYTON, OHIO

When writing The American Gauge Co. please mention Purchasing

AMERICAN *Aircraft Motors*

SET THE PACE ··

Aircraft manufacture — America's No. 1 industry today! Making the best, the fastest, the hardest hitting planes ever built — *and more of them!* Beating quotas and schedules — setting a new pace for fast and precision production. » » » And right in step — Wesson Carbide Cutting Tools establish new standards for cutting tougher metals, faster — *with precision and perfection never before attained.*

Wesson leadership, recognized in aircraft motor production, will meet the challenge of new and finer "tooling up" for post-war production.

The counsel of Wesson engineers — skilled in engineering and designing of cutting tools — is available to help solve present war production problems, or for post-war planning.

WESSON CO., DETROIT, MICH. (Ferndale Station)

WESSON
Carbide Cutting Tools
First choice when tough metals are to be cut — for special or standard purposes — for single or multiple setups.

WHEN IT'S OVER "Over There" we'll all have a higher standard of living "over here." Better vacuum cleaners, refrigerators and washing machines—better cars, trucks, planes, bicycles — better tractors, plows and other farm machinery. Industrial plants will have better tools and better machines. They will all serve better, last longer, cost less and be safer. One important reason is that Wesson Carbide Cutting Tools will enable the manufacturers of all these products to use more durable, tougher metals — insure greater precision and perfection — and at the same time cut costs by saving production time.

When writing Wesson Co. please mention Purchasing

This Little Motor does Double Duty

"Army Air Force student pilots are taking Bombing Trainers up and down, incessantly . . . landing, taking off, landing, again and again, at high speeds. The wing flap motors just can't take it. We tried mounting two motors, tandem. That didn't work either. What we need is a single motor with double the power — but no bigger in size or weight than those we're now using." ★ That's the way the problem was put to Dumore engineers. The old 1/20 h. p. motors, 6½" long and 3⅛" in diameter weighed 3 lbs. each. Dumore created a new 1/6 h. p. motor of the same weight, but only 6-13/32" long and 2-11/16" in diameter. ★ Dumore engineers specialize in solving knotty power problems. That's why there's hardly a warplane in the sky, without a number of Dumore's 30 types of Aeromotors in it, operating vital controls and accessories.

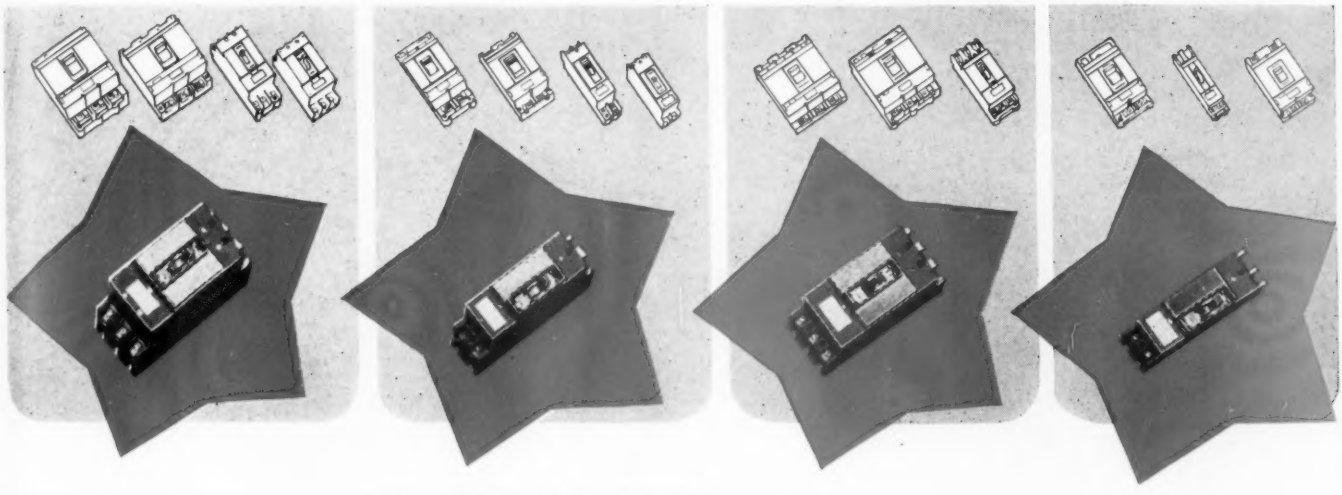
THE DUMORE CO., Dept. 353E **RACINE, WISCONSIN**
Manufacturers of Precision Grinders, Electrical Tools and Fractional Horsepower Motors

Dumore
FRACTIONAL HORSEPOWER AIRCRAFT MOTORS

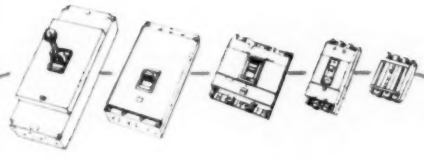
When writing The Dumore Co. please mention Purchasing

mobilized
FOR WAR

4 breakers
TAKE THE PLACE OF 14

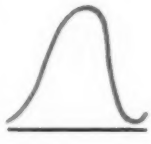


——TO SAVE 18% COPPER
——TO SAVE 38% STEEL
——TO CONSERVE SPACE
——TO IMPROVE CIRCUIT PROTECTION



Nofuze "De-ion" Breakers

—prevent *harmless* overloads from interrupting war production.



—protect circuits from *dangerous* overloads and "shorts."

—restore service *instantly* with just a flip of the switch.

As a voluntary war measure, Westinghouse has "mobilized" the Nofuze line of "De-ion" Breakers. For example, all ratings from 15 to 100 amperes have been made available in one compact frame size. Instead of 14 models, 4 now serve the same purpose. Pole spacing and terminal arrangements have been made standard for interchangeability. Space is saved—vital materials are conserved.

Today, the production of Nofuze Breakers is concentrated on war requirements. Our engineering facilities are serving all branches of the war effort on a broad consulting basis.

Result: many far-reaching developments are being made . . . overload protection of low-voltage circuits has been greatly improved. If you have a war circuit problem, ask your Westinghouse representative for engineering help. Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa., Dept. 7-N. J-60523

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

NOFUZE CIRCUIT PROTECTION

Doctor of Supply Disorders

(whose cures amaze the experts)

There is a busy specialist in your neighborhood who has saved many a plant from prostration induced by supply disorders. He is your Industrial Distributor.

His skill in prescribing the effective remedy in war production emergencies was gained in long years of successful peacetime practice. No kindly country doctor has ever served his patients with greater understanding of their needs, or greater disregard of his own time and effort.

He can diagnose deficiencies in Design. He knows what is available, what isn't. He can often point out simple changes in specifications to allow the use of "standard" items from stock, when "specials" are unavailable.

He is completely informed on Priorities, and the new Allocation Classification. He can help you get the proper rating for orders under current regulations.

His advice on Conservation can help you salvage irreplaceable tools and equipment. He can often supply parts and service to repair them and get them back on the job.

He can prescribe practical Maintenance methods for servicing operating equipment . . . to get better performance, and make it last for the duration.

Call your Industrial Distributor at the first sign of a supply "headache", before it develops into something more serious. For your valve needs, Jenkins distributors will place a specialist at your service.

Jenkins Bros., 80 White St., New York, N. Y.; Bridgeport, Conn.; Atlanta, Ga.; Boston, Mass.; Philadelphia, Pa.; Chicago, Ill. Jenkins Bros., Ltd., Montreal; London, England.

JENKINS VALVES

SINCE 1864

For every industrial, engineering, marine and power plant service . . . in Bronze, Iron, Cast Steel and Corrosion-Resisting Alloys . . . 125 to 600 lbs. pressure.